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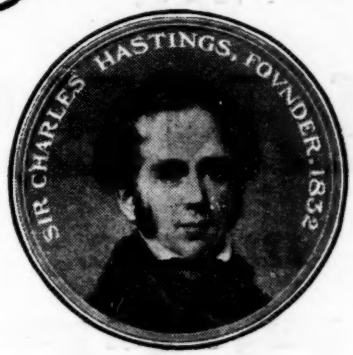

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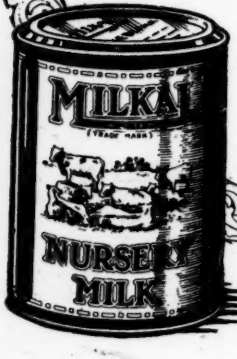

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SOME APPLICATIONS OF PHYSIOLOGY TO MEDICINE.

II.—VENTRICULAR FIBRILLATION AND SUDDEN DEATH.*

BY

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It may be permissible to recall that in the pages of this JOURNAL[1] thirty-four years ago I brought forward a new view as to the causation of sudden death by a previously unrecognized form of failure of the heart's action in man—a view fundamentally different from those entertained up to that time. In the course of a long series of experiments on the mammalian heart, sudden deaths, occurring under varied experimental conditions, were found to be invariably associated with a very definite mechanism of failure entirely different in character from what had hitherto been believed to be present in cases of sudden dissolution in man depending on cardiac failure. Little attention was given to the new view for many years. At that time the current conception of the relations of the experimental physiology of the heart to practical medicine was widely removed from what it now is, thanks very largely to the work of Sir James Mackenzie and his associates and followers; it was not then recognized that most of the disturbances that have been experimentally induced in the mammalian heart (for example, fibrillation, flutter, heart-block, extra-systoles of various types, rhythms of abnormal origin, alternation of the heart beat, etc.) have their clinical counterparts in the manifold derangements of function in diseased conditions in man.

In more recent times the view that ventricular fibrillation is a cause of sudden death in man has been accepted by numerous observers. Sir James Mackenzie[2] writes of sudden death in auricular fibrillation: "It has appeared to me probable that in these cases the ventricle has passed into fibrillation as MacWilliam suggested." Again, referring to sudden death from heart failure: "The cause of sudden death is almost certainly due to the onset of an abnormal rhythm, probably ventricular fibrillation." Sir Thomas Lewis[3] states that "We have now the strongest *a priori* reasons for believing that sudden and unexpected death comes to many patients in a manner suggested by MacWilliam in 1889." The causation of death in this way has also been recognized by Hering[4] and many other observers.

Direct electrocardiographic curves indicative of ventricular fibrillation at the moment of death have been recorded, notably by an American observer, Halsey.[5] Opportunities for the gaining of such direct evidence are naturally scanty, but the indirect evidence that has accumulated is sufficient to show that this is, in all probability, not only a common cause but the usual cause of sudden and unexpected death of cardiac origin.

Relation of Death from Fibrillation to Ordinary Myocardial Failure.

The mode of death described in this article is a failure of the heart's action essentially different from cardiac (or myocardial) failure in the sense of exhaustion of the contractile power of the cardiac muscle; a verdict in the latter sense would usually be, in cases of sudden death, fallacious. While such exhaustion of contractility is, of course, of common occurrence in disease, it is a gradual process, leading to more and more marked impairment of the pumping power necessary to maintain a good circulation and to respond to the increased demands of muscular exercise, etc. There is no ground for the assumption that a *sudden* loss of power can occur—that is, that muscular fibres endowed with contractility adequate for a tolerably good blood pressure and blood flow should abruptly become enfeebled or paralysed, apart, of course, from the sudden action of violent poisons or such gross causes as asphyxia, obstruction of coronary supply, haemorrhage, etc. What really happens in the supervention of ventricular fibrillation is a misapplication of contractile energy thrown away in a turmoil of fruitless activity, a disastrous change occurring in muscle that may be already more or less limited in power, or that may, on the other hand, be possessed of vigour more than sufficient for the ordinary needs of the circulation. This often occurs in a heart showing no failure of rhythmicity, excitability, or contractility.

The inadequacy of former explanations of sudden death by failure of the heart to contract and expel its contents, asystole, etc., need hardly be emphasized; such explanations assumed a failure of rhythm or a sudden loss of muscular power for which there is no warrant. Before the experimental investigation of the mammalian heart had shown the actual mode of abrupt and complete failure of the ventricular pump by the occurrence of fibrillation, the observed phenomena of sudden death by syncope — the sudden abolition of pulsation and all other manifestations of the beating of the heart—naturally led to the belief that the end had come through a simple failure of contractility. It was not realized how extraordinarily resistant and enduring the contractile power of the heart is, even under experimental conditions of exposure, manipulation, and severe strain of various kinds.

Sudden Death and the Pathological Changes found post Mortem.

It is well known that in many cases where death is believed to have resulted from cardiac failure the heart has been found *post mortem* to present structural characters apparently little if at all removed from the normal. An elaborate study of sudden death and the pathological conditions associated with it was made by Brouardel and Benham.[6] In this book, extending to more than 300 pages, a great deal is to be found as to numerous and varied morbid conditions and structural changes in various organs, etc., in cases where death has occurred suddenly, while it is stated that in some cases no lesion is found. Elaborate details of dead-house anatomy are presented, but no explanation is given, or indeed attempted, as to how vital function has suddenly broken down, when up to that point in many cases, in spite of pathological conditions that have often been present, the individual has been able to go about his affairs with fair or good activity of body and mind. It is obvious that such structural alterations (coronary lesions, myocardial degenerative changes, etc.) as were found after death were, up to the sudden catastrophe, quite compatible with tolerable efficiency of the functions necessary for the maintenance of a more or less active life; to determine death an abrupt change must have occurred — a process fundamentally different from such slow impairment or limitation of function as may have been present up to the final disaster.

Some Characters of Ventricular Fibrillation.

The inception of ventricular fibrillation is a sudden event, though very often preceded by more or less complex disturbances in the normal action. There is an abrupt replacement of the effective systole by a continuous turmoil of inco-ordinated activity in the muscular bundles, excessively rapid small contractions, each of short duration, coursing over the intercommunicating muscular fasciculi, so that, while some portions are contracted, others are relaxed; the result is mere oscillation or inco-ordinated quivering of the ventricular walls, with complete loss of the expulsive power normally brought to bear on the contained blood by the strong and simultaneous state of mechanical tension present in all the muscular fibres during the normal systole. The effect on the circulation resembles that of absolute stoppage of the ventricular beat with complete cessation of its muscular activity, such as may be caused by the introduction of certain poisonous agents, etc. While fibrillation is of universal occurrence, under certain conditions, in all warm-blooded animals—both mammals and birds—its tendency to persist when once established varies greatly, being much greater in the higher mammalian types. In some animals among the lower mammals (rat, rabbit, etc.), as well as in

*Part I was published in the BRITISH MEDICAL JOURNAL of January 13th, 1923 (p. 51).

some birds, spontaneous recovery from fibrillation frequently occurs, but in the higher mammals, and probably in man, the condition of true fibrillation seems to be invariably fatal —in the absence of the remedial measure of cardiac "massage," which may, in animals at least, be supplemented by the administration of certain drugs, while artificial respiration is maintained. Some instances of assumed spontaneous recovery in the higher mammals and in man are probably not cases where true fibrillation had been fully established, but a related though essentially different condition, which may easily be mistaken for true fibrillation.

The essential feature of fibrillation is the establishment of a mechanism of circulating excitation in the musculature, depending on a derangement of the normal relations of (1) the time taken for conduction of the excitation wave over the ventricular muscle, and (2) the refractory period of the individual fibres. If the conduction time is unduly prolonged, or the refractory period is relatively too short, re-excitation is apt to occur when the excitation wave reaches fibres that have already recovered sufficiently after the previous excitation to respond again; the excitation wave can then circulate through the complexly arranged intercommunicating fasciculi; after a time it becomes feebler and slower as exhaustion develops, until in a few minutes all visible movement becomes extinguished. If rhythmical compression (massage) of the ventricles is employed (while artificial respiration is kept up) the fibrillation may be maintained for prolonged periods (an hour or longer), with ultimate recovery under favourable conditions; and such a heart may show regular and vigorous action for the remainder of a long experiment extending over hours.

So long ago as 1887[7] I described this mechanism as a peristaltic contraction wave along the complexly arranged and intercommunicating muscular bundles, in contradistinction to the normal beat.

> "The peristaltic contraction travelling along such a structure as the ventricular wall must reach adjacent muscle bundles at different points of time, and since these bundles are connected with one another by anastomosing branches, the contraction would naturally be propagated from one contracting fibre to another over which the contraction wave had already passed. Hence, if the fibres are sufficiently excitable and ready to respond to contraction waves reaching them, there would evidently be a more or less rapid series of contractions in each muscular bundle in consequence of the successive contraction waves reaching that bundle from different directions along its fibres of anastomosis with other bundles. Hence the movement would tend to go on until the excitability of the muscular tissue had been lowered so that it failed to respond with a rapid series of contractions. Then there might be some isolated peristaltic contractions, such as I have often seen after the cessation of the fibrillar movement."

These conclusions were confirmed and extended in a paper in 1918,[8] while in the interval similar views had been advanced and supported by experimental evidence — by Mines[9] (1913) in the case of the frog heart and by Garrey[10] (1914) in the mammalian heart. Suggestive experiments had been made by Mayer[11] (1908) on medusa, etc.

Relations of Refractory Period and Conduction Time.

If the fundamental importance of the relation between the duration of the refractory period and the conduction time of the muscle is kept in view it is easy to understand how the mechanism of circulating excitation may come into operation under very diverse conditions affecting the ventricles. Any influence cutting down the refractory period or lengthening the conduction time disproportionately must naturally tend to favour the process of re-excitation; a combination of such changes is, of course, still more effective. Hence the development of fibrillation is witnessed at one time as an apparently "spontaneous" event in a vigorous heart manifesting signs of extreme irritability (for example, from chloroform, digitalis, etc.) or in a normal heart subjected to stimulation —excessive rapidity of excitation playing an essential part by shortening the refractory period and slowing the conduction time. At another time fibrillation appears in a heart that presents features of grave depression, diminished contraction force, loss of tone, lessened excitability, and—what is the determining factor in this case—pronounced slowing of the propagation of the excitatory wave, relatively to the duration of the refractory period; such may be seen in poisoning by potassium salts, extreme cooling, etc.; thus it is often a terminal, or approximately terminal, phase in the dying heart. In some depressed hearts there is a decided liability to fibrillation from mechanical disturbance, external pressure on the ventricles, incising the pericardium so as to remove its support from a relaxed ventricular wall, etc. In either case, whether fibrillation is a manifestation of perverted irritability or of abnormal depression, the same explanation of disturbed relationship between the processes named holds good.

In accordance with this conception it is readily intelligible that the *absolute* values of refractory period and conduction time may undergo extensive variation without fibrillation being set up; if both of these factors vary proportionately the conditions of circulating excitation do not arise. Thus artificial cooling of the heart, stopping short of a certain extreme point (about 23° C. in the perfused cat's heart), does not induce fibrillation, there being a concurrent lengthening of refractory period and conduction time as the cooling goes on—within the limit stated.

Conversely there may be, as results of a rise of temperature, etc., a marked shortening of the refractory period without fibrillation occurring, the rate of conduction of the excitatory impulse being also accelerated. The essential dependence of the mechanism of fibrillation on the factors named makes it clear why there should be no constant or necessary relation between the incidence of fibrillation, and even great alterations in contractile force, tone, etc. Dilatation of the ventricles is credited by Levy with a protective influence; this view is negatived by various observed facts—among others the proneness to fibrillation seen in ventricles weakened, relaxed, and distended as a result of potassium poisoning; and conversely, the marked resistance or insusceptibility to fibrillation in ventricles that are of small volume, acting strongly and rapidly and well emptied at each beat, in sequence to a large dose of adrenaline, etc. So long as the essential relationship, described above, is not upset a heart may be profoundly influenced in many ways without fibrillating: it may beat very rapidly or very slowly, regularly or very irregularly, powerfully or feebly; it may be well emptied or imperfectly emptied at each beat—with consequent distension in the latter case; it may be very sensitive or very dull to direct stimulation, and its muscle may be lax or firm, etc.

Pseudo-Fibrillation.

Apart from the disastrous event of true fibrillation there is also to be observed under certain experimental conditions (for example, rapid artificial excitation by a series of electrical shocks, mechanical stimulation, etc.) a temporary condition in the ventricles presenting many points of resemblance to true fibrillation—a degree of inco-ordination or asynchronous contraction of the musculature, recognizable on inspection and on palpation of the ventricular substance, attended by great reduction in the range of contraction movement and very little expulsion of blood at each beat, a great fall in arterial pressure, and a failure of recognizable pulsation in the peripheral arteries, etc. It is impossible to distinguish this condition from true fibrillation by examination of the arterial pulse.

Usually this condition is soon recovered from when the artificial stimulation is discontinued, though it may persist for variable periods. It apparently differs essentially from true fibrillation in its dependence on a rapid series of excitatory impulses emanating from a stimulated area or "spontaneously" from one or more irritable foci, these impulses forcing a succession of ventricular beats at a rate incompatible with their normal characters; cessation of these excitatory impulses is speedily followed by a reversion to the more moderate rates that are compatible with the normal type of beat. The non-persistence of the abnormal condition is due to the fact that the mechanism of circulating excitation, characteristic of true fibrillation, has not been fully established. To this condition I have applied the term "pseudo-fibrillation." It is probable that most, if not all, the alleged instances of transient fibrillation in man where recovery occurred—apart from the application of cardiac massage—were examples of pseudo-fibrillation as recognized experimentally; this would account for the features observed in man during the brief attack, and for the subsequent recovery.

Such is probably the explanation of such a case as that described by Robinson and Bredeck[12] in which there were repeated syncopal attacks simulating those of the Adams-Stokes syndrome; in one of these attacks an electrocardiographic record was obtained and showed characters apparently resembling in some measure those of ventricular fibrillation—followed by recovery. In another case F. M. Smith[13] obtained an electrical record suggestive of fibrillation, the attack being recovered from within a minute. Hoffmann[14] has also published an electrical curve of a temporary condition evidently approximating to, but not reaching, the fully developed condition of fibrillation. There is also a case reported by Kerr and Bender[15] of temporary fibrillation or a closely allied condition (under quinidine therapy) where records were obtained.

The Question of Recovery from True Fibrillation.

As has been already stated, spontaneous recovery from ventricular fibrillation is very frequently seen in the hearts of the lower mammals—for example, rat—but recovery is increasingly difficult and rare in the higher forms. In the cat and rabbit, after true fibrillation has lasted for periods of considerable duration (minutes), the ventricles may, without treatment, sometimes show cessation of the fibrillation movement and "spontaneous" recovery of the power to execute weak co-ordinated beats, with more or less definite pumping out of blood from their chambers into the arteries. This recovery occurs too late as a rule, if not invariably, to provide for continuance of the life of the animal, for the collapse of the circulation has lasted too long for restoration of the vital functions. Most instances of true fibrillation do not show this sort of ventricular "recovery"; the fibrillation movement usually becomes slower and feebler and gradually flickers out in the dying muscular fibres.

In the human subject it is probable that true fibrillation is (apart from treatment by cardiac massage, etc.) usually if not invariably fatal, though it seems possible that such recovery of separate though feeble ventricular beats too late for the survival of the individual may occur—if one may put this interpretation on the phenomena of some cases that have been recorded by Sir William Osler,[16] cases presenting in striking fashion the external features associated with the occurrence of fibrillation. Referring to sudden death in some anginal subjects, he writes:

> "Possibly in some act combining intense emotion with muscular effort there is a rapid change, a sudden unconsciousness, a stony stare, a slight change in the facial expression, and then with two or three gasps all is over; no pulse is felt at the wrist; the respiration stops; but even when the patient is apparently dead a feeble heart impulse may be felt or faint heart sounds heard."

In one of these cases where slowly recurring respiratory gasps occurred over some minutes, cardio-puncture with a long thin aspirator needle showed movements indicating heart beats at gradually diminishing rates—52, 44, 32 per minute—ceasing fifty minutes after collapse and forty-five minutes after the last inspiratory gasp. (It may be remarked that the phenomena here described by Osler were not such as to be suggestive of reflex vagus inhibition.)

Osler's description of such deaths may be compared with what Sir Thomas Lewis[17] says of deaths from ventricular fibrillation, occurring in subjects of auricular fibrillation:

> "From time to time a sudden and unexpected catastrophe happens; regarded as convalescent, the patient is sitting in bed, chatting or feeding maybe. A nurse in charge, or perhaps a neighbouring patient, hears a cry or choking sound; the patient falls back on the pillows intensely pale, there are a few gasping respirations, a little convulsive movement, and the pulseless patient, rapidly becoming livid, is still."

Relation of the A-V Junctional Tissues to Ventricular Fibrillation.

Unlike auricular fibrillation, which, as is well known, may go on over a long term of years, ventricular fibrillation is promptly fatal, involving as it does an abrupt and complete abolition of the pumping action of the ventricles and a speedy cessation of the circulation. The effect of auricular fibrillation is to impose a more or less extensive limitation to the efficiency of the heart in two ways—by the absence of the normal action of auricular systole in completing the filling of the ventricular force-pump, and still more by the rapid and disorderly lead given to the ventricles by the rapid and irregular excitations transmitted from the fibrillating auricles to the ventricles; the latter involves a wasteful and exhausting expenditure of the energy of the ventricular muscle, attended by relatively poor results in the way of maintaining the circulation.

Fortunately the structure and properties of the junctional tissues between auricles and ventricles are such as to afford a most important protection against transmission of the fibrillation from the auricles to the ventricles. In default of such protection the onset of auricular fibrillation would necessarily be fatal by extension to the ventricles. It is known from experiment that in the auricular and ventricular muscle, with their complexly arranged bundles of fibres, fibrillation can be propagated across an artificial isthmus, made by incision, connecting portions of the musculature, only as long as the isthmus is of sufficient breadth; in the junctional mechanism, comprising the A-V node with its special properties, and the narrow A-V bundle with its longitudinally arranged fibres terminating in the Purkinje network on the inner surface of the ventricles, the fibrillation process fails to be transmitted (as such) either from auricles to ventricles or from ventricles to auricles. The junctional mechanism, while able to conduct impulses sufficiently fast to give ventricular beats at rates much above those of the normal heart under resting conditions or in moderate exercise, is not able to transmit the vastly more rapid and characteristic series of excitations of fibrillation. It is only under certain very special conditions, where the susceptibility of the ventricles to fibrillation (at relatively slow rates of excitation) is extraordinarily great, that the writer has in rare instances seen any experimental evidence of the possibility of ventricular fibrillation being excited from the auricles by impulses passing through the A-V bundle. The possibility of such occurring under pathological conditions in man is worthy of consideration.

The Purkinje network formed in the interior of the ventricular walls by the arborizations of the fibres of the A-V bundle form a sort of distributing board over which the normal impulses descending the bundle spread swiftly so as to be delivered almost simultaneously to the myocardium at the various parts of the ventricular cavities, bringing about the normal co-ordinated contraction of the ventricular fibres at each beat. Such mode of excitation is obviously unfavourable to the development of the fibrillation mechanism, but the latter might under certain conditions be promoted by an abnormal delivery of irregular and aberrant exciting impulses, dependent on defects in the branches of the bundle or its terminal arborizations, such partially interrupted or distorted impulses impinging upon the myocardium at different points in abnormal fashion—alterations in timing or direction of the impulses as might readily be determined by morbid conditions in some parts of the conducting network. An exaggeration of these functional aberrations may easily be favoured by circumstances making an extra call on the heart, such as emotion or muscular effort, or by the succeeding phase of reaction with its increase of vagus control and other changes.

There is some clinical and pathological evidence that points to the operation of such causes, resulting in ventricular fibrillation and sudden death in the human subject, though the particular mode of causation indicated above does not seem to have been suggested. Thus Nuzum[18] described a case of sudden death in a man, aged 38, who had shown no definite signs of ill health and where there were no adequate microscopic *post-mortem* findings to account for the fatal issue, apart from marked alterations present in the branches of the A-V bundle in the shape of fatty infiltration or replacement, the Purkinje fibres being beset with fatty droplets, etc.

Sapegno,[19] from a study of seventy-two cases, inferred that rapid unexpected death may be due to acute or chronic lesion of the bundle fibres, the acute changes being predominant in these fibres when both they and the ventricular myocardium were affected. He cites an instance of sudden death in a girl twelve days after recovery from typhoid fever, not associated with the acute changes sometimes seen in the myocardium after typhoid, but with lipomatosis in the bundle fibres—the cell substance being largely replaced

by fat—from the point of division of the main stem to the point where the two main divisions decrease rapidly in size. Monckeberg[20] described two cases of sudden death associated with lesions of the Purkinje fibres. One was a diphtheria case, where no gross changes were found in the myocardium, but fatty changes were shown by staining with Scharlach R in the main stem, branches, and subdivisions; the myocardium was fat-free. In the other case (trephining of skull, etc.) there were more pronounced fatty changes in the bundle fibres than in the myocardium, though some of the Purkinje fibres seemed to have remained normal.

It need hardly be recalled that several observers have described certain abnormal features in electrical records from the heart as being indicative of defective conduction in the main branches, bundle block (Lewis and others), or in the intraventricular Purkinje network (arborization block)—bizarre ventricular complexes with notching or splintering of the deflections, prolongation of the duration of the Q R S group oscillations, inversion of the T wave, etc., in addition to a remarkably low altitude of the curves in arborization block. (Oppenheimer and Rothschild,[21] Carter,[22] Willius,[23] and others.)

Exciting Causes of Ventricular Fibrillation.

In the many observed cases where all the facts point to ventricular fibrillation as the immediate cause of sudden death the common association of muscular exertion or emotional excitement is notable. The ever-recurring reports of sudden deaths during or shortly after exertion, in persons who up to the fatal issue had been able to pursue their usual avocations, emphasize the importance of the conditions attendant on muscular effort—those involving an increased demand on the powers of the heart and more or less stress on the organ. This is brought about in various ways: by the augmentation of rate and force and irritability through the agency of the cardiac nerves (diminution or suspension of vagus control and excitation of the cardiac sympathetic augmentor fibres), increased arterial pressure presenting greater resistance to the pumping out of the ventricular contents, increased diastolic filling due to more rapid inflow from the venae cavae, etc. Similar changes attend emotional excitement, with the exception of the greatly increased venous return to the heart depending on the pumping action of the working muscles during exertion driving on the blood in the veins.

While the normal heart is not injured by such changes, and in virtue of its great reserve power easily responds to increased demands on it, a heart that is temporarily or permanently in an abnormal condition of excessive susceptibility is apt to be thrown into fibrillation.

Susceptibility to Ventricular Fibrillation.

Both in healthy and diseased animals notable differences in the ease with which fibrillation may be induced were seen under experimental conditions that were apparently similar. And a heart may sometimes be seen, under altered conditions, to pass from the susceptible condition to a stable one, which may be exceedingly resistant to the induction of fibrillation by various forms of stimulation that are usually very effective. Or a change in the opposite sense may take place; or there may be variation from one phase to another more than once in the course of a single experiment in the case of a healthy heart subjected to certain abnormal influences. On the other hand, there are many cases where the abnormal susceptibility is a persistent one associated with altered nutritive conditions, toxic agencies, etc., in the muscle.

In healthy animals, cats particularly, a great susceptibility to fibrillation may be established by the administration of chloroform; the relation of this condition to the phase of light chloroform anaesthesia has been specially worked out by Levy, most (though not the whole) of whose results are in agreement with those obtained by the present writer over a long series of years. It is after a deeper phase of chloroform anaesthesia that the lighter phase is apt to be attended by the marked susceptibility referred to.

In the latter condition fibrillation is often readily induced by stimulation of afferent nerves in various ways—resulting in reflex contraction of skeletal muscles, disturbance of respiration, rise of blood pressure, increased rate and force of the heart with increased return of blood through the great veins, etc.—in short, the same group of changes that occur in muscular effort, and brought about in similar fashion through the instrumentality of the vagus and cardiac augmentor nerves, excitation of the respiratory and vasomotor centres, and the mechanical action of the skeletal muscles in propelling blood more rapidly back to the heart by the veins—increasing the rate of its diastolic filling and its output and work per minute very largely.

It is plain that it is through these changes that the sudden fibrillation of the ventricles is determined in a susceptible heart under chloroform, and there is a strong *a priori* case for the presence of a similar mechanism in the occurrence of fibrillation and sudden death (apart from chloroform) during or shortly after muscular effort—granted a condition of abnormal susceptibility in the ventricular muscle.

In addition to chloroform there are various other toxic agencies capable of establishing the hypersensitive state. Referring to drugs, it is well known from experimental evidence (adduced by Cushny and others) that bodies of the digitalis series have a powerful influence in this direction—as also have barium salts, etc.—and when pushed to extremity kill by causing fibrillation. A whole series of chemical substances might be cited as having well defined effects in this direction. And some abnormal metabolic products may well exercise a similar influence in this respect on the cardiac muscle. The development of the hypersensitive condition is not necessarily attended by any recognizable structural alteration. A prominent part in the setting up of abnormal susceptibility to fibrillation must be assigned to defective coronary blood supply.

Some Effects of Experimental Coronary Obstruction.

It is unnecessary to recall in detail the long series of experimental investigations at the hands of many workers which have demonstrated the frequent occurrence of fibrillation as a result of ligation of a coronary artery or one of its larger branches. The evidence available leaves little, if any, room for doubt that death from sudden coronary obstruction in man is due to fibrillation; the clinical features of many recorded cases are very significant, taken in conjunction with the very definite facts established by experiment in animals. The reason of the difference between non-fatal and suddenly fatal coronary obstruction is usually to be found in the non-occurrence or occurrence of ventricular fibrillation in the different cases.

It has been found experimentally that coronary occlusion, if sufficient to prove fatal, may do so in more than one way: (1) it may kill rapidly (minutes) from acute ischaemia causing ventricular fibrillation, or (2) failing this, it leads to damaged nutrition with degenerative changes (anaemic necrosis, fibrosis, etc.); these changes, apart from leading in rare instances to rupture of the heart, naturally diminish the contractile efficiency in degrees varying according to the severity of the anaemia and its distribution. Recovery may occur and life be prolonged indefinitely; or death may be suddenly caused by the supervention of fibrillation. It is easy to understand how altered functional relations in the tissues of the damaged area may lend themselves under certain conditions to the decisive upset of the normal relations of refractory period and conduction time in the ventricular walls. It remains to be seen whether the tendency to fibrillation after coronary ligation is dependent mainly on the conditions induced in the Purkinje system or in the ordinary myocardium or in both of these.

The significance of some of these results of experimental physiology does not seem to have been fully realized in relation to their bearing on the human subject. In this connexion the convincing researches of W. T. Porter[24] (1896), Baumgarten[25] (1899), Miller and Matthews[26] (1909), and F. M. Smith[27] (1918) are specially relevant. Numerous observations show that in presence of the defective blood supply following ligation the abnormal conditions that develop in the anaemic areas can not only predispose and lead up—often after months—to fibrillation, either during muscular exertion or during rest, but that the abrupt onset of fatal fibrillation may come without preceding signs of cardiac failure, as tested by exercise, or without immediately premonitory evidences of cardiac disturbance in the shape of

extra-systolic irregularities, tachycardia, etc. Thus fibrillation can occur without apparent exciting cause and quite apart from the sequence commonly observed—extra-systoles, tachycardia, and fibrillation—when death suddenly comes as an early event after coronary ligation. In other cases, at a much later time, disturbances of rhythm and evidences of heart failure present themselves, increasing in intensity and eventuating in fibrillation. Or temporary irregularities may have developed at varying periods after ligation—to give place later to regular rhythm, and then after weeks or months to fibrillation and sudden death.

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(To be continued.)

NINETY-FIRST ANNUAL MEETING

OF THE

British Medical Association.

Held at Portsmouth, July, 1923.

PROCEEDINGS OF SECTIONS.

SECTION OF MEDICAL SOCIOLOGY.

Dr. H. B. BRACKENBURY, President.

PRESIDENT'S OPENING REMARKS.

THE PRESIDENT, in opening the proceedings, said that the Section had at least one exceptional feature in that, alone among the Sections of the Annual Meeting, it was attended by a very considerable proportion of people who were not members of the medical profession. The medical members welcomed these lay visitors and their contributions to the discussion, because in the case of such a subject as this much that was of value could be contributed by experts other than medical. He read apologies for inability to be present from Sir Leslie Scott, K.C., M.P., a Vice-President of the Section, and from Sir Bryan Donkin, and announced that in the course of the day Miss Evelyn Fox (honorary secretary of the Central Association for Mental Welfare) would exhibit at a neighbouring picture-house a film illustrating the education of mentally defective children; apparatus for mental tests and an exhibit of work done by mental deficients were also to be seen in the Pathological Museum.

DISCUSSION ON MENTAL DEFICIENCY IN ITS SOCIAL ASPECTS.

INTRODUCTORY PAPERS.

I.—WILLIAM A. POTTS, M.A., M.D.,

Medical Officer to the Birmingham Committee for the Care of the Mentally Defective; Psychological Expert to the Birmingham Justices; Visiting Physician, Great Barr Hall, etc.

THE importance of the subject of mental defect is not fully realized. The number of mental defectives is large, and their problem intimately interwoven with most social difficulties. In Birmingham, with its population of about a million, the local authority is dealing with 440 defectives by maintaining them in institutions or under guardianship, while 36 more are temporarily or permanently transferred to asylums: there are 261 on the waiting list for institutions, and 550 more are under observation. The Education Committee is dealing with 1,119 in special schools, and has 435 more waiting for examination, who have been reported as probably mentally defective. The guardians are dealing with many additional cases, some of whom are not classified as defectives at all. Further, there are a number of defective children under 7, not yet causing trouble anywhere, except possibly at home, with whom the Education Committee and the local authority will have to deal later. Nor does this complete the tale. Those responsible for the working of the Act know from the way in which fresh cases of all ages under 40 are continually cropping up that the lists are far from complete.

The number, then, is large. So far from the estimate of the investigators for the Royal Commission on the Feeble-minded in 1906, of one in every two hundred of the population, erring on the side of excess, the mistake may have been in the other direction. The American army tests, introduced when America came into the war, were instrumental in excluding many defectives. Investigation showed that many, who were useless for the army, had been carrying on satisfactorily as hewers of wood and drawers of water. As you know, a mental defective can often manage in a simple environment to which he has gradually became adapted. A change, however, may disturb his equilibrium so much that he is never able to adjust again. But it must be remembered that all mental defectives at large are a potential danger to the community, and that the potential danger increases as modern industry becomes more complicated and the opportunities for going wrong more frequent.

Before the passing of the Mental Deficiency Act it was said that the nation which first had such an Act would benefit enormously, and that nations which ignored the problem would inevitably go under. We were the first to have an Act applicable to the whole country, and not merely to a particular province, as in the State of New York. But are we making proper use of the Act? Are we not inclined to pat ourselves on the back for having passed the Act, and to say that we know it is there if we want to use it, and then forget all about it? This is the attitude of many of those responsible for our municipal government, many of whom have never even taken the trouble to inquire what mental defect is, and still labour under the illusion that mental defect is synonymous with idiocy, and can be recognized at a glance by anyone who has shown such capacity as to secure a seat on the Bench. The truth, however, is that the majority of defectives can only be detected by careful investigation, their diagnosis requiring thorough and sometimes repeated examinations by those who have made a special study.

Nothing is of more importance to this Section than the relationship of mental defect to other problems. Take venereal disease: here mental defectives constitute one of the great difficulties, for they neither protect themselves against disease, nor realize the importance of treatment, and especially of continuing it until the disease is cured. Investigations in infirmary lock wards have shown the presence of a large proportion of feeble-minded women. Not infrequently the local authority for defectives has to delay placing a feeble-minded girl in an institution for defectives till the syphilis from which she is suffering has been cured.

Chronic drunkenness, again, though not pathognomonic of mental defect, often claims as victims men and women whose judgement and self-control are so poorly developed as to constitute a form of feeble-mindedness.

Illegitimacy also is a problem that cannot be considered regardless of mental defect: 30 per cent. of defectives is a proportion often found in rescue homes where the feeble-minded are not carefully excluded, and a specially qualified medical officer appointed to enforce this regulation. Many experienced workers would welcome a thorough medical and psychological examination of the young women coming under their care, not in the narrow spirit of attempting to rake as many as possible into the mentally defective institution net, but on the broad principle that every human

being is capable of being helped, if he is normal, and that all who fail in life should be studied to see how far they require help, and what kind of help is essential, alike in their own interest and that of the community. At the same time all social workers should understand that mental defect, being a definite clinical entity, not uncommon among social failures, should always be thought of first, and not last.

In work with criminals and delinquents the same spirit should prevail. Punishment cannot help those who require treatment or re-education. So many delinquents—at any rate so many of those who are caught by the police—do require such treatment that the public would welcome a thorough preliminary medical investigation to determine how far the offender is a deliberate wrong-doer, and how far a victim of his environment. Such ideas are sometimes not appreciated by the legal element, who think they alone are competent to deal with such cases, despite the unsatisfactory results they often obtain; they sometimes regard the medical psychologist as a dangerous and unbalanced crank, who wants to segregate every mental defective he can find, and to explain away or gloss over the wrong-doing of all other delinquents. But the judicial authorities must understand that the psychologist believes above everything in the gospel of hard work, and wants to help those who can be helped, with due regard to the safety of the community, and to segregate the impossible, as long as they remain impossible.

Again, take the problem of the unemployed, many of whom are said to be unemployable. One of the first steps should be to sort out the mentally defective; the dole never deals with their problem. It is an extravagant way of treating them, and leaves them free to reproduce other degenerates.

So too with war pensions and "shell shock" cases: some of these are, always have been, and always will be, mentally defective; the sooner those are weeded out the better for them, and the better for those who, both by their past record and their future possibilities, are entitled to skilled and expensive treatment.

In some of these groups will be found many borderland cases, who might be classified in other ways. When they are taken into account—for they cannot be ignored—and when there are recognized also the incipient, but as yet undeveloped, cases of adolescent insanity which are in many ways closely associated with mental defect, it becomes clear that the group which primarily or secondarily, owing to their mental condition, requires care is far from insignificant. Only one in every two hundred of the population may be a well marked mental defective, but the number of those who require a good deal of help, in part at least because of their psychological inferiority, is larger. Dr. Clarke of Toronto in his Maudsley lecture told us that out of 3,442 cases under 16 met with in their clinic 8 per cent. were classed as suffering from mental disease or psychopathic inferiority. Although it is possible to recognize in many such cases definite nutritional, endocrine, or other important failure, to class them in any other way than as psychopathic is only evading the issue. There is no reason for thinking that in our older country with its large cities, and correspondingly large slums, the psychologically inferior are less numerous.

In dealing with this problem we must adopt a broad outlook, and not attempt to pigeon-hole different varieties of one group, the essential feature of which is inability to adjust psychologically to their environment. If the number of the psychologically inferior seems to be greater than we had realized, it does not follow that we need be pessimistic. Once we recognize the group, study its development and deal with it, we can be optimistic. We must not be so blindly optimistic as to think we can eliminate the type. Defectives always have existed, and always will exist. It is not certain that there is a bigger percentage than there used to be. It may only be that the circumstances and conditions of our present civilization make them more obvious. The principal cause is heredity; therefore segregation, even if only partial, will reduce the number. But heredity, although the outstanding cause, is not the only cause. The statistics which seemed at one time to lead almost inevitably to the conclusion that heredity was the only factor that mattered have been shown to have been unduly stressed. In some cases this was due to the fact that what was likely to be inherited was not mental defect, but a psychopathic make-up; in others, notably some of the American records, the figures were based not on scientific investigation, but on hearsay evidence obtained long after the unsatisfactory ancestor was dead. Clarence Darrow is responsible for saying that the alarmist record of the so-called Kallikak family was partly obtained in this way, and therefore is not necessarily correct. This we can easily believe, because we know that a satisfactory member of society is not always followed by equally satisfactory descendants, while the progeny of the less desirable sometimes reverts to the normal. This does not belittle the importance of heredity and segregation of the defective, but will remind you that segregation alone will not solve the problem; in addition all unfavourable factors must be eliminated as far as possible. If both these principles receive attention a degree of success well worth attaining will be achieved. Those who have the care of the mentally defective and all other social workers must join hands to combat the racial poisons, syphilis and alcohol. Other known unfavourable agencies must not be forgotten, such as infectious disease of the mother during pregnancy. Toxins and bad environment must contribute in some cases to the incidence of mental defect. It has been established that at the time when the determiners separate out of the germ cells, healthy influences promote variation of a good type, while unfavourable ones tend towards a bad type.

Once mental defect is established little can be done to eradicate it. The great opportunity is at the ante-natal clinic, where disease must be dealt with, and failure of endocrine and other organs receive attention. But it is only those who come very early to that clinic who can expect much help. Highly skilled medical practitioners are essential there; in addition a high standard of national health, especially among married women, must be achieved. Once a child is born defective the opportunity has usually gone. But even then much may be done by careful home training in the early years to develop a capacity for some service to the community, and to diminish the potentiality for harm. It is in the school clinic that the opportunity occurs for recognizing and scheduling the pathological or asocial child. All such require careful supervision, not with the object, as some cranks think, of shutting them up for life the first time they fail ever so little, but in the hope of preventing failure, and of training and building up character so that they may contribute something, in however humble a capacity, to the work of the world. The more efficient the supervision, the more thorough the early investigation, the fewer will have to be segregated later. The public must be taught that those who are segregated are being treated and not punished; that it is the only way in which they can lead happy and useful lives. The institutional life essential for them is arranged not only for their benefit, but also in the interests of their normal brothers and sisters, who are often seriously handicapped by the presence of a defective in the home or the school.

You will see that I attach great importance both to the ante-natal clinic and the school clinic, which should deal not only with the physical make-up but also with the psychological make-up of every child. Their medical officers should have knowledge and experience, and not be merely recently qualified practitioners taking up the work as a stop-gap. We require larger vision in such matters, such vision as will prevent our grudging the necessary expenditure at the only times when expenditure can do much good. We want the vision, also, which will enable us to see that all social workers are working for the same end, and must pull together. So, too, we must not cavil over which authority cares for the feeble-minded. What does it matter whether it is the Guardians, the Mental Deficiency Committee, or the Education Authority which acts, provided care is given, the defective helped, and the community protected?

At the present moment many local authorities are forced

to hold their hands for lack of funds either to build, or to board out their cases. This seems likely to continue for some years. The Guardians, however, often have accommodation available and sometimes the funds too. When that is so, every encouragement should be given them. It is absurd to try and stifle their efforts, if they are the only people who can act. Even if they did not deal with defectives well, it is something to deal with them at all. But no one can visit Darenth, Monyhull, Great Barr Hall, and Prudhoe Hall, among other institutions, without being forced to admit that the Guardians are as efficient in this matter as any other body. The problem is so urgent and so vital that we must act.

As regards segregation, we need not be unduly pessimistic: the number of those to be segregated is large, but experience both in this country and in America has shown that good training and control in an institution for a sufficient length of time (seven to twelve years) during the plastic and dangerous years of adolescence and early adult life often develops such capacity to behave properly that the defective may return to his home, if it is fit and willing to receive him. Many high-grade defective girls, who must be segregated at 17 for the good of the race, behave well on discharge at 30 or a little later.

But the burden of segregation is so heavy at the present crisis that many are seeking a substitute, and are beginning to ask whether sterilization would be as efficient and less expensive. Others will enlarge on this question. I will merely say now that sterilization has always appeared to me an irrational procedure; it is irrational because in nearly every case in which it could be justified the unfortunate defective must still be segregated, because he is a menace to society in other ways than the breeding of other degenerates. The sterilized delinquent will go on stealing and giving trouble to the police. Feeble-minded young women could not be sterilized and then turned loose to spread venereal disease broadcast. Possibly applicable in a few cases, it can never be a solution of our problem. If defectives have a right to live, they have a right to live as unmutilated individuals. A lethal chamber is at least a rational proposition, because it does mean economy; but the time has not yet come when our administrators can insist on anything so drastic, even though the defective is an idiot, without relations or friends, who can only drag out a miserable existence, a burden to those in charge of it, not even an object of scientific interest.

The problem of the mentally defective which I have outlined is very urgent. I will leave it to others to fill in the details.

II.—Mrs. ELLEN F. PINSENT,

Commissioner of the Board of Control.

The Mental Deficiency Act has now been in existence nearly ten years, and it may be interesting to give some account of the work which has been accomplished under its provisions.

This Act was based to a large extent on the findings of the Royal Commission on the Care and Control of the Feeble-minded, and it will be helpful towards understanding the problem to quote one or two passages from their report. The Commissioners stated that they were compelled by the evidence to come to the conclusion

"that there are numbers of mentally defective persons whose training is neglected, over whom no sufficient control is exercised, and whose wayward and irresponsible lives are productive of crime and misery, of much injury and mischief to themselves and to others, and of much continuous expenditure wasteful to the community and to individual families."

The report says:

"We find a local and 'permissive' system of public education, which is available, here and there, for a limited section of mentally defective children, and which, even if it be useful during the years of training, is supplemented by no subsequent supervision and control, and is, in consequence, often misdirected and unserviceable. . . . We find large numbers of persons who are committed to prisons for repeated offences, which, being the manifestations of a permanent defect of mind, there is no hope of repressing, much less of stopping, by short punitive sentences. We find lunatic asylums crowded with patients who do not require the careful hospital treatment that well equipped asylums now afford, and who might be treated in many other ways more economically and as efficiently. We find, also, at large in the population many defective persons, adults, young persons and children, who are, some in one way, some in another, incapable of self-control, and who are, therefore, exposed to constant moral danger themselves, and become the source of lasting injury to the community."

The number of mentally defective persons in England and Wales (apart from certified lunatics) was estimated at 149,628, or 0.46 per cent. of the population. Of these, 66,509, or 44.45 per cent., were estimated to be urgently in need of provision either in their own interest or for the public safety. Only such cases were included as were "improperly, unsuitably, or unkindly cared for, or who by reason of particular habits and characteristics are a source of danger to the community in which they live."

It may be useful to consider the underlying principles which dominated the recommendations of the Commission and to discuss how far they were carried out by the Act of 1913. These principles can be stated as follows:

1. That those persons who by reason of mental defect cannot take part in the struggle of life should be afforded State protection suited to their needs. This principle had already been adopted in English law with regard to idiots and lunatics, and the Royal Commission proposed to extend it to all grades of mental defect.
2. That the mental condition of these persons, and neither their poverty nor their crime, is the real ground of their claim for State protection. Many mentally defective persons are dealt with as paupers or criminals, but before the Mental Deficiency Act there was no means of dealing with them primarily as mentally defective.
3. That if the mentally defective are to be dealt with as suggested above it is necessary to ascertain who they are and where they are. It was anticipated that this would be done chiefly through the local education authorities, who already had this knowledge concerning children in all districts where special schools existed.
4. That the protection of the mentally defective person should continue as long as it is necessary both in his own interest and in the interests of the community. It was shown that this principle involved the power to segregate and detain mentally defective persons under proper conditions and limitations, and that this was an extension to the whole group of the mentally defective of the advantages already given to lunatics and idiots. It was fully recognized that mental defect, amentia, was a permanent condition and one that called for continuous care and control either at home, if the home circumstances were favourable, or under guardianship or in suitable colonies or institutions.
5. Lastly, it was strongly recommended that, in order to supervise the local administration dealing with the protection and control of the mentally defective, a single central authority was indispensable. Unity of care and control may be said to be the keynote of the whole report.

Speaking of the evidence before them, the Commissioners say:

"This evidence suggests for our consideration as a main issue how far it is possible to create a system by which these mentally defective persons could, at an early age, be brought into touch with some friendly authority, trained and, as far as need be, supervised during their lives, in co-operation with their relations, when that is to their advantage, or, when it is desirable, detained and treated in some measure as wards of the State. The evidence also suggests that, as so many authorities are brought into contact with these persons—the Poor Law, prisons, schools and the like—in some way a settled plan of action should be established between the various agencies, so that some one supervising authority should see that they did not pass from one authority or institution to another, helped or detained a little in each but permanently cared for by none."

It is seen, therefore, that the main principle which stands out prominently in the report and recommendations of the Royal Commission is that to secure adequate treatment of the mentally deficient there must be unity and continuity of care and control. The object of this paper is to show how far it is possible to carry out this policy under the provisions of the Mental Deficiency Act.

Except in a small percentage of cases it cannot be said that the Mental Deficiency Act is at present exercising unity or continuity of control, though it undoubtedly aimed at creating the machinery by which these conditions could be secured. It established one central authority, the Board of Control, for the "general superintendence of matters relating to the supervision, protection and control of defectives," but the Act did not hand over all defectives to the Board's care. Children up to the age of 7 can be dealt with under the provisions of the Mental Deficiency Act; from 7 to 16 the Board of Education is responsible for feeble-minded children; after 16 those needing further care can be dealt with by the Board of Control. The Home Office is responsible for those dealt with under the Children's Act and also through the prison service for adult mentally defective

criminals, while the Ministry of Health, through the Poor Law, deals with very large numbers and all types and ages of the mentally defective. These central authorities have corresponding local authorities, and although the Mental Deficiency Act created an elaborate system whereby a defective could be transferred from the care of one authority to that of another, it is found in practice that it is most difficult to secure complete co-operation between the various local authorities and that the procedure is far too complicated. It is still to a large extent true that "mentally defective persons pass from one authority or institution to another, helped or detained a little in each, but permanently cared for by none."

The fundamental idea of continuity of control was the prevention of personal degradation and disaster to the individual defective and of the attendant social evils. It was seen that by early recognition and protection defectives could receive sufficient training and care to prevent them becoming drunkards, criminals, "in and out" paupers, and the parents of children whom they could not support and whom they often neglect and ill treat. But the provisions of the Mental Deficiency Act, except in one instance, are insufficient to carry out this idea. Section 2, which sets out the classes of defectives "subject to be dealt with," shows that only those are eligible for care and protection in whose case some personal disaster has already taken place—for example, neglected, abandoned, or cruelly treated, found guilty of any criminal offence, undergoing imprisonment, habitual drunkard, in receipt of Poor Law relief when pregnant or at the time of giving birth to an illegitimate child, etc. The single exception is Section 2 (*b*), v, which gives the local education authorities power to notify to the committees for the care of defectives those children who would benefit by institution care or guardianship. This is the one provision of the Act which seems to have been framed with the idea of preventing disaster and securing continuity of care for those who need it, and if thoroughly carried into effect it would go far towards solving the whole problem.

Immediately after the passing of the Mental Deficiency Act the Elementary Education (Epileptic and Defective Children) Act was amended and its adoption by local education authorities made compulsory, and it would not be too much to say that the success of the former depends greatly on the thoroughness and efficiency with which the latter is administered. The early recognition through the local education authorities of all defective children, and their appropriate treatment, constitutes a first line of defence both for the individual and the community. If defective children are scientifically studied and carefully trained, it is found possible to distinguish those who will need further care and protection from those who will benefit sufficiently by special training to become self-standing and able to manage themselves and their affairs.

Unfortunately the war and the consequent financial restrictions have prevented the Elementary Education (Epileptic and Defective Children) Act from being brought into complete operation. The last available figures in the annual report of the chief medical officer of the Board of Education show that some 16,000 mentally defective children are being dealt with in special schools out of an ascertained number of 31,000. The statistics of the After-care Committee which has been the longest time at work (twenty years), and has followed up 2,600 cases, show that only 28 per cent. of children who pass through special schools become self-supporting, and that all the others need some measure of support and protection and care.

It will be observed that the other 15,000 mentally defective children for whom no special schools have been provided will drift out from ordinary elementary schools into the general population without being notified under the Mental Deficiency Act, and are therefore, however much in need of care, not "subject to be dealt with" until some disaster brings them within its provisions. The restrictions on public expenditure seem likely to prevent any increase of the number of children admitted to special schools, and as the local education authorities do not notify feeble-minded children leaving ordinary elementary schools, numbers of defectives will leave at 14 without a chance of further help and care.

It is clear, therefore, that the chief means of making the Mental Deficiency Act really effective in the prevention of degradation and disaster to the feeble-minded, and expense to the community, is the thorough and scientific working of the Elementary Education (Epileptic and Defective Children) Act. If for financial reasons the work of this Act has to be curtailed, it is highly desirable that some temporary arrangement should be made whereby defective children needing control between the ages of 7 and 16 could be brought under the protection of the Mental Deficiency Act and properly supervised. Co-operation between the school medical officer and the medical officers of the statutory committees for the care of defectives might do much towards continuous care, but in order to secure full protection it should be the ordinary practice of the local education authority to report to the local authority any defective child leaving or excluded from an elementary school.

The next effort to obtain continuity of care by the provisions of the Mental Deficiency Act occurs in relation to cases who are constantly drifting in and out of Poor Law institutions. Section 30, Proviso ii, provides a means whereby a defective who needs continuous care may be transferred to the local authority and sent to a suitable institution. But the procedure set up has proved complicated and lengthy. It involves correspondence between two central and two local bodies, and it has, moreover, an element of uncertainty which discourages Poor Law guardians from putting it into effect. The local authority is sometimes unable, through want of accommodation, and sometimes unwilling, to assume responsibility, and it is not infrequently found that before all the formalities are completed defectives whom it is desired to protect have taken their discharge from the Poor Law institution. As an illustration of the great need for a better link between the two local bodies concerned, the following quotations are given from *A Review of the Conditions of Defectives in Poor Law Institutions*, which was published by the Board of Control in 1919.

"In twelve workhouses in one part of England forty-two mentally defective women were noted as cases in urgent need of control—twenty-three of these have had between them at least fifty-one children, two being pregnant at the time of the report; nineteen had not at present had children."

At another time the Commissioners say:

"One woman was reported to us as having had nine illegitimate children, six of whom were born in the house. We noted three cases of girls only 17 years of age with illegitimate children. One of these was pregnant for the second time, and one was certainly a certifiable imbecile, so defective that she could not wash and dress her baby. The powers of the Poor Law authorities have hitherto proved entirely insufficient for the protection of these mentally defective women. The treatment extended to them has been spasmodic and not continuous. It does not prevent them from becoming morally and physically degenerate, neither can it always secure the adequate and continuous care of their children."

Instances of the above description might be given from a very large number of Poor Law institutions, and, combined with the knowledge that numerous defectives come in touch with the Poor Law at an early period in their lives, show the desirability of trying at this stage to secure continuity of care and control. Even without further legislation much might be effected by the complete co-operation of the medical officer of the Statutory Committee for the Care of Defectives with the medical officer of the Poor Law institution. A routine procedure could be established whereby the local authority should always be informed when defectives leave a Poor Law institution; they could then be kept under supervision in order that help might be forthcoming if necessary. But to secure real continuity of care the transference of responsibility to the local authority should be made as simple as possible.

It is important to remember that the administrative difficulties referred to are such as must necessarily follow the initial stages of carrying out the provisions of the Mental Deficiency Act, and that the public owe a debt of gratitude to a large number of boards of guardians for consenting to receive mentally defective cases from local authorities.

The idea of continuity of care may be traced again in Section 16, which provides for transferring a defective who has recovered from an attack of insanity from a mental hospital to an institution for defectives. Very little use

has at present been made of this section. The mental hospitals still contain large numbers of congenital cases who could be better dealt with in colonies for the feeble-minded. This is partly due to the want of such accommodation, but not wholly, as there are still vacancies in certified institutions approved under Section 37 of the Act. It is also due to visiting committees not appreciating their powers under this section and to lack of complete co-operation between the visiting committees and the local authority. Consequently a number of congenital defectives are discharged from mental hospitals, and, though probably all do not require further institutional care, it would be an immense advantage if they could be brought into touch with the local authority and placed under friendly observation or supervision—a procedure which would tend to prevent a return to the mental hospital. In order, then, to link up the means of affording such cases help and care and to secure continuity, the medical superintendent or the visiting committee of the mental hospital should inform the local authority of the discharge of mental defectives from mental hospitals.

A valuable amount of protection and care can be afforded to defectives by Sections 8 and 9. These establish a procedure whereby mentally defective persons proved guilty of offences may, in lieu of sentence, be sent to an institution or placed under guardianship, and whereby defectives detained in a reformatory or industrial school or undergoing sentence in prison may be transferred to a certified institution. Action taken under these sections is unfortunately often too late to prevent young persons from contracting anti-social and vicious habits, but it may be in time to prevent them from becoming habitual criminals, and in the case of youthful offenders it affords an early starting point for the continuous care for which their mental condition calls.

At the close of 1922 the number of cases remaining in institutions who had been dealt with under Sections 8 and 9 was 1,312. This figure represents a gradual accumulation since the year 1914, but no particulars are available of the total number of such cases admitted since that date. It is difficult to form an idea as to the proportion this number (1,312) bears to the actual number of mentally defective criminals, but it is interesting to observe that the medical investigators appointed by the Royal Commission estimated that at least 10 per cent. of the prison population were mentally defective.

Dr. Tredgold approaches the matter from a different standpoint, and concludes that at the date of his investigation in 1906 there were probably between 12,000 and 13,000 aments with pronounced criminal and anti-social tendencies in England and Wales. It may fairly be concluded that there are still a large number of mentally defective persons who are discharged from time to time from prison without the protection afforded by the Mental Deficiency Act. Here again a great deal might be done by further co-operation between the medical officers of the prisons and the medical officers of the local authorities. If for any reason an order under Section 9 is not made it would be a great advantage if the local authority could be informed of the discharge so that the defective could be kept under supervision and prevented if possible from a return to criminal courses.

Under Section 30 (*a*) of the Mental Deficiency Act it is the duty of the local authority to ascertain what persons within their area are defectives subject to be dealt with. The returns of the local authorities as to numbers vary greatly. Some authorities have not ascertained a single case, while the greatest proportion ascertained in one area is 3.50 per thousand. It is probable that in some districts the search for defectives has either not been made, or made in a perfunctory manner. Though no reliable estimate can be given for the whole population, the following figures are of interest.

Five urban and five rural areas were selected in which the largest proportion of defectives have been found. The five urban areas have a combined population of 3,500,681. The total number of defectives ascertained is 5,793, or a ratio of 1.65 per thousand. The five rural areas have a combined population of 1,214,730. The total number of defectives ascertained is 2,286, or a ratio of 1.88 per thousand. If similar proportions obtain in the whole of England and Wales as in the above ten areas the estimated number of defectives to be ascertained works out at 64,783.

This is still far below the figures given by the Royal Commission, who estimated that there were 149,628 defectives, 66,509 of whom were in urgent need of further provision. But it is difficult to compare these figures, for the following reasons: (1) The Royal Commission's estimate included all defective children, whereas feeble-minded children between the ages of 7 and 16 do not come within the jurisdiction of the local authorities. As has been stated above, the report of the Board of Education shows that 31,000 school children have been ascertained to be mentally defective, and this is undoubtedly far below the number that actually exist. (2) The Royal Commission's findings included a large number of defectives in Poor Law institutions. These are not ascertainable under the Mental Deficiency Act, and it is not possible to obtain accurate figures, but it is known that a very large number of the inmates are mentally defective, and to those must be added those in receipt of outdoor relief.

The total number ascertained by local authorities on January 1st, 1922, was 25,470, or 0.67 per thousand of the population. It is therefore highly probable that a very large number of defectives exist for whom the Mental Deficiency Act has not yet provided any measure of care, training, and protection.

Section 30 (*b*) imposes on local authorities the duty of providing "suitable supervision" for defectives who have been ascertained to be subject to be dealt with under the Act. The manner in which, and the extent to which, this duty has been carried out leave much to be desired. Some local authorities have actually no cases under supervision, while others are making great use of this method of protection and care.

The latest available figures show that 9,854 defectives were under statutory supervision on January 1st, 1922. It is difficult to determine how far this supervision is effective in affording adequate protection, and there is reason to believe that its usefulness varies enormously with the personal equation of the supervisor. The usual method is to secure periodic visits to the defective at home, and reports of these visits are presented to the local authority. Sometimes the local authority employs a visitor engaged directly for the purpose, and sometimes delegates the whole of the supervision of defectives to a voluntary association. Both methods, if wisely carried out, are successful. In other instances we find that local authorities rely on visits made by relieving officers or the police or by sanitary inspectors. Better results would be obtained if the visits were paid by women, who should be specially selected as likely to have a sympathetic understanding of the conditions of the homes and a knowledge of the mentally defective. Whenever possible, these women should be given a short course of training such as that organized by the Central Association for Mental Welfare. The importance of obtaining for this work persons of good judgement and with the requisite experience cannot be overestimated, particularly when we remember that it becomes their duty to report to the local authority whenever "supervision affords insufficient protection," and therefore guardianship or institutional care is advisable. It is of primary importance that the confidence of the parents should be gained, and to do this visits must be frequent and conducted with the greatest tact and sympathy.

Section 30 (*d*) imposes on local authorities the duty of making provision for the guardianship of defectives. This is a means of protection and care for those under order but whose condition does not call for institutional treatment. At the close of 1922 there were only 370 under guardianship, showing that comparatively little use had been made of this form of treatment. The reasons which deter local authorities from taking this course appear to be, first, the difficulty of finding suitable guardians, and, secondly, the belief that if a defective is suitable for family life, supervision at home will afford sufficient protection. There is much evidence to show that this is incorrect. There are a number of defectives who have no home, and many others whose homes are most unsuitable and whose parents are unable to exercise adequate control. It is a pity that there has been no organized effort to increase the number of cases dealt with by guardianship. It would be possible for a large

local authority, either through its own officers or through a local voluntary association, to organize a guardianship scheme somewhat on the lines of the Brighton Guardianship Association. The essential features would be a wise choice of homes, of suitable cases, and of trained visitors who would keep in close touch with the defectives and report on their progress, mental and physical condition, and on any change in their surroundings or behaviour which might indicate the advisability of a transfer to an institution. Transfer from guardianship to a certified institution is a simple matter and can be effected under Section 7 by a variation of the order.

The provision of institutional accommodation is at once the most onerous and most valuable of the duties imposed on local authorities by the Act, and it is, unfortunately, one which it is impossible for the present to carry out efficiently owing to the severe financial restrictions consequent on the war. Even if full use is made of less expensive forms of care and treatment, such as supervision and guardianship, there will always remain large numbers of defectives whose condition calls urgently for institutional treatment, both in their own interests and in the interests of the community.

The existing accommodation for defectives at the present time is about 19,200 beds, and shows an increase of about 16,000 since the passing of the Mental Deficiency Act. But nearly 7,000 of these beds are in Poor Law institutions, and therefore do not represent the actual number available. Many of these places have already been filled up by ordinary paupers, while some of the Poor Law institutions limit the defectives they will receive to those belonging to their own union, with the result that, even if vacancies exist, they cannot be filled.

It must also be remembered that Poor Law institutions are, with a few exceptions, only approved for adults, and are only suitable for a certain limited class of defectives. They can seldom provide sufficient training and employment, and life in them for long periods is exceedingly confined and monotonous. A large proportion of this accommodation, therefore, can only be regarded as a temporary provision pending the establishment of suitable colonies. When we turn to the ordinary certified institutions, we find that vacancies are very difficult to obtain, and that most of the institutions have a long waiting list. The accommodation therein available on January 1st, 1923, was for 11,232 cases, and there were resident at that date 7,891, dealt with under the Mental Deficiency Act, and 2,126 other cases—totalling 10,017 in all, thus leaving only 1,215 vacancies. These are nearly all confined to one or two large and recently opened institutions, and are, generally speaking, only available for cases from the surrounding district. Only fourteen of the existing 126 local authorities have institutions of their own; the others are dependent on charitable and philanthropic efforts or on Poor Law institutions. No new institutions have been opened by local authorities during 1922. The number of mentally defective cases in institutions on January 1st, 1923, was 15,327.

In the foregoing pages an attempt has been made to show how far the Mental Deficiency Act has met the difficulties experienced by the community in adequately protecting the mentally defective. Twenty-five thousand cases have been ascertained, and 9,854 of them placed under supervision. Some 16,000 beds have been provided for those needing institutional care. Compared with the numbers needing protection, these figures cannot be said to constitute more than a beginning. There is no doubt that a much greater advance would have been made if it had not been for the war and the consequent financial restrictions. How long these restrictions will continue and what will be the future rate of advance it is impossible to foretell, but taking into consideration the high cost of building and of maintenance it may safely be assumed that progress will be very slow. This being so, thoughtful people are more and more inclined to consider whether there is any possibility of action on other and different lines.

Is there any method of community control outside institutions which would ensure the safety of the defective and the protection of the interests of the community?

How far is complete segregation of large numbers and varying types practicable, and if rigorously carried out how far would it cut off the supply?

If the community decides that the segregation of defectives is essential for its welfare, what steps can be taken to render it less irksome for the individual?

Is it possible to promote scientific research which may reveal the causes of congenital mental deficiency and suggest its prevention?

The answers to these questions will require many years of patient, untiring experimental work—the humane and scientific treatment of the mentally defective is yet in its infancy—but enough has been done to show that in the solution of this problem lies a hope for the gradual improvement of social conditions. Something has already been accomplished, and if the two Acts now in existence were brought into complete operation and thoroughly administered it would lead to an immediate reduction in drunkenness, pauperism, crime, illegitimate births, and venereal disease.

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SEGREGATION OF MENTAL DEFECTIVES.

WE all realize how difficult it is to deal effectively with the problem created by the presence of so many mental defectives in the community. In some respects segregation seems to be the most practical method of attacking the problem. It is not merely custody or imprisonment, but a method of treatment; it protects the community from what may be and often is a socially harmful person; and it effectually prevents propagation. At the same time segregation presents both sentimental and practical difficulties, and more especially so in those cases where it is perhaps most desirable from a social point of view. We feel no hesitation in recommending institution care in the case of low-grade defectives. We know that it is best for the child to be under skilled care—best for the parents in the long run, and certainly best for other members of the family group. Apart from the fact, however, that these cases are unproductive and an expense to the community, they do not constitute a very serious social problem, as they are harmless and unlikely to propagate. It is the high-grade cases which give rise to a social problem, and we may limit our discussion to these.

As mental deficiency has here to be considered in its social aspects there is no need to discuss segregation as a form of treatment—that is, from the individual point of view. The sociological reasons for placing the feeble-minded in institutions may be included under two headings: (1) The prevention of delinquency, vagrancy, prostitution, etc.; (2) the prevention of propagation by persons who will probably produce inferior children.

Dr. Potts, in his opening address, showed the relationship between mental deficiency and venereal disease, chronic drunkenness, illegitimacy, delinquency, and unemployment. There is, of course, not the least doubt that many defectives are a misery to themselves and a menace to others, and, this being so, it is both humane and socially necessary that they should be segregated in colonies or elsewhere. If such steps are taken, not only will these individuals cease to be destructive social units, but they will probably become useful members of the community in which they are placed, and almost self-supporting. In thus advocating segregation for certain defectives there is no suggestion of "attempting to rake as many as possible into the mentally defective institution net," as Dr. Potts aptly puts it. I do not think there is likely to be any abuse of segregation in this country. Apart from the practical difficulties involved in the segregation of all mental defectives, we all feel a profound aversion to depriving an individual of his liberty unless it is clearly necessary. In practice magistrates and medical men devote the most careful attention to the difficult high-grade cases, and only commit them to institutions after every other possibility has been explored. I do not think it necessary to add anything more as to the value of segregation as an instrument in the prevention of delinquency by irresponsible persons. Both Mrs. Pinsent and Dr. Potts have spoken so clearly, temperately, and humanely on this aspect of the question that I feel it unnecessary to expand

the subject further. We may now consider the value or otherwise of segregation from the eugenic point of view, and briefly discuss Mrs. Pinsent's question as to how far complete segregation of large numbers of varying types is practicable, and if rigorously carried out how far it would cut off the supply.

Without attempting to discuss the complex laws of heredity, we may make the general statement that the most frequent and potent cause of degeneracy is some kind of mental weakness in the progenitors. The question to be considered, therefore, is how far it is possible to segregate individuals with mental weakness with a view to preventing the propagation of the unfit. The case of the intellectually inferior may be first considered, because we know that if a moron gives birth to a child it will probably be inferior, and if the child be the product of two morons it will certainly be so. At the present time we aim to segregate (in the main) morons (children or adults) who give trouble to the community. It is those who exhibit intellectual weakness *plus* bad behaviour that we feel justified in placing under control. Now bad behaviour is not *necessarily* an inherent tendency of the feeble-minded person; it is often a product of a faulty environment, and sometimes I believe it to be a kind of neurosis engrafted on a feeble-minded soil. Now may there not be a large number of individuals whose intelligence level will be found as low as those we describe as feeble-minded, but who do not become social problems? They manage to earn a living at pursuits which demand very little intelligence, and lead tranquil and harmless lives. No one remarks upon them or thinks it desirable to place them in institutions; they even marry and have children. Such cases we should certainly diagnose as feeble-minded if they behaved antisocially or if they came into prominence in other ways. During the war I observed a number of cases of this kind. They had led useful and harmless lives in agricultural districts, but when they had to adjust to war service they became bewildered and frightened and wandered away, and perhaps developed a "situation" psychosis. It was only this accident which led them to be regarded as feeble-minded. An interesting eugenic question therefore arises as to whether the good and harmless moron, whom we should not dream of segregating or even recognize as defective apart from unusual circumstances, is likely to produce biologically superior children to the vicious moron whom we do segregate. It is thus a moot point whether by segregating the vicious moron we do more than touch the fringe of defectives who are liable to bring into existence inferior types.

It may next be observed that if all mental defectives were prevented from propagating, a large number of degenerate individuals would still be produced as a result of mental weakness in the parents. In so far as degeneracy is due to hereditary factors we know, of course, that only a small proportion of degenerates are the product of feeble-minded persons. It must be remembered that the term "degeneracy," used in a wide sense, does not only include the intellectually inferior but also many forms of inherent emotional instability. Thus an unstable ancestry is a strong predisposing factor in actual psychoses such as dementia praecox, paraphrenia, paranoia, and the epileptic, manic-depressive, and alcoholic insanities. Individuals suffering from these forms of disorder are, of course, segregated and thus prevented from propagating, but they are only kept in institutions as long as they are ill. As physicians we rejoice when these cases are restored to health and reason, and they are able to return to their homes; whereas, as eugenists, we ought, perhaps, to mourn, in view of the fact that some of them will most certainly be responsible for bringing more degenerate children into the world. At the present time there is a strong social trend against the segregation of psychotics, and if this is carried to an extreme it may react unfavourably on the mentality of the coming generation. An undue sentimentalism in regard to the liberty of the individual may also result in allowing freedom to a number of individuals who are a definite menace to the community and a serious anxiety to their family. We must not only think of the individual but also of the family group, and in many cases the social efficiency of those who have to live with an abnormal personality and adjust to his or her whims is diminished by at the very least 25 per cent.

A great number of insane persons are, however, segregated, and thus the propagation of the unfit is, as in the case of the vicious feeble-minded, controlled. There are still, however, a large number of abnormal personalities who do not exhibit behaviour so abnormal as to be regarded as insane, but who nevertheless are just as likely to produce degenerate offspring as individuals who exhibit severe psychotic episodes or who become permanently deteriorated. Thus there is that imperfectly delimited group of psychopathic personalities who, though not certifiable, give the community no end of trouble; then there are the eccentric, cranks, misfits, cyclothymics, psychoneurotics, and alcoholic and drug addicts. Many of these types inherit a "sensitivity" which is liable to be transmitted to their offspring, who may be either intellectually deficient or emotionally unstable.

There are, again, a large number of biologically inferior persons in whom the hereditary taint was indirect—that is to say, the parents were perfectly normal but the collateral relatives were mentally weak in some way or another. By no system of segregation, however stringent, could the birth of such individuals be avoided. Indeed, in these indirect and atavistic forms of heredity, if the parents had consulted us as physicians in regard to their fitness for bringing children into the world, we should have hesitated to take the responsibility of suggesting that marriage would be inadvisable.

Lastly, there are quite a number of cases in which there is no evidence of abnormal heredity at all and the parents are perfectly healthy. This I have found more frequently in the case of mental defectives than of the insane. In such instances we simply cannot account for the deficiency.

I feel, therefore, that just as we certify the insane because they behave abnormally, so we should content ourselves with segregating those defectives who are unable to care for themselves or who exhibit antisocial propensities. We do not segregate, and obviously cannot segregate, the psychotic or the feeble-minded because they may produce inferior offspring, but because of their behaviour. Everyone who has to deal with these cases will agree that a great deal more of these cases require institution care than can at present be accommodated, and it is much to be hoped that further provision will be made. If we attempted to segregate for eugenic reasons there would really be no limit to the number of institutions required. This must be so if the calculation made by the Eugenic Record Office that about one-third of the population in the United States is capable of conveying mental deficiency, the insane tendency, epilepsy or some other defect, is a correct one.

In so far, then, as mental weakness is due to inherent factors, I think segregation can only diminish to a partial extent the supply of those bearing this taint. It seems hardly possible to control the birth of human beings as one can animals; so many emotional factors are involved in the mating of humanity, and any measures adopted by the community to control birth must appeal to our sentiments as well as to our reason. We do not really know whether there is more degeneracy now than in former ages—though, fortunately, we have become more conscious of its importance and extent—but it is at any rate satisfactory to know that the silent processes of Nature do tend towards the elimination of the unfit. By his biological researches Sir Frederick Mott has shown that there is a tendency for insanity not to proceed beyond three generations, and degenerate stock is eliminated by disease processes. In my own work I have often observed the almost total extinction of families by mental disease and consequent segregation; in one case both parents and three children were confined in the same asylum.

The argument contained in these few observations may be stated briefly as follows: By segregation of the insane, epileptics, delinquents, and mentally deficient we remove a large number of persons who are a potential or actual menace to the community; and by so doing we prevent in some degree the propagation of the unfit, though unfortunately those whom it is easiest to segregate are often those who are most unlikely to propagate. There remain,

however, a large number of mentally unstable and intellectually deficient people who for various reasons cannot be segregated, but who, nevertheless, are a source of anxiety and need help and guidance. We can do much for such individuals by supervision from childhood onwards, by extending our social welfare organizations, by finding work fitted to their abilities, by protecting them from adverse influences, by creating out-patient clinics, and by organizing hospitals for uncertified cases. We cannot, however, "change a leopard's spots," and the psychiatrist always feels that behind his work the sinister shadow of heredity looms large. How, then, can these persons be prevented from propagating? I think educational methods would do much. If the youth of the country and people generally were taught some of the general principles of mental hygiene, and were instructed more especially as to the importance of marriage and child-bearing, many thoughtless unions would perhaps be prevented. I certainly think that definite knowledge would do something to lessen the birth of the unfit. Too much reliance, however, must not be placed on reason where the sex impulse is concerned, because the blindness of love is notorious.

I have the feeling that my observations terminate somewhat inconclusively. Perhaps they could scarcely do otherwise as our problem concerns human beings, and each case we deal with is a complex personality which cannot be treated by cut-and-dried methods. Each case is unique and demands individual consideration. It is something to recognize that mental disorder is a problem worthy of attention, and I think that the community as a whole is beginning to realize that those who are condemned to go limping through life through no fault of their own are deserving of sympathy and consideration.

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STERILIZATION OF MENTAL DEFECTIVES.

THE fact that in this Section of Medical Sociology there is a discussion on mental deficiency to-day speaks volumes for the increasing interest which is surely being taken by those who are earnestly endeavouring to do whatever may be in their power to improve the condition of the mentally unfit; who take a serious view as to the necessity of preventing the advent of any but healthy children, and who have at heart the well-being of our race.

As the time at our disposal is very short, I must confine my remarks to showing briefly that, according to statistics, mental deficiency is on the increase; to emphasizing the cause of this increase; and especially to attempting to discover whether, in the opinion of those present, the time has arrived for the adoption of radical measures to limit the number of mentally deficient children brought into the world, and thus gradually reducing their number to a minimum.

In Great Britain and Ireland, according to the most recent figures collected, there were over 178,000 mentally affected, and without burdening you with actual figures I may say there has been a steady increase over former numbers. Such figures cannot, of course, include many who are taken care of by their relatives or friends at home. With such appalling numbers, it is imperative that everything in our power should be done to ameliorate this state of affairs, and the sooner radical means are taken seriously to endeavour to effect an improvement, the better it will be for our country. It is certainly remarkable that, notwithstanding the large increase in these numbers, so much hesitation concerning the adoption of drastic measures for their reduction exists. I need not refer to the numbers affected in years previous to those I have quoted, but as it is evident that there is a distinct increase in the figures the question must be asked, To what is this to be attributed? Without hesitation, the answer must be "Heredity." Doubtless many cases are the offspring of parents showing signs of a breakdown even before marriage, owing to continued anxiety, coupled with the wear and tear of modern life, etc. But even in the case of parents both of whom appear well and strong, it will be found in the vast majority of cases that there is a neuropathic strain traceable in the family history of the father or mother. Heredity is the most wonderful sequence of the fusion of the sexual pronuclei, for the resulting germ contains the images of two individuals, and is therefore capable of transmitting their characteristics to the individual developed from it. This being so, we know that nothing we can do will alter the result of a marriage between two individuals with a serious neuropathic history, for it has never been known for two mentally defective individuals to become the parents of a normal child. It is stated that no less than two-thirds of all feeble-mindedness is due to heredity.

It may be said that much may be done by the upbringing of a child in a satisfactory environment, and although it is true that heredity and environment cannot be studied apart with reference to the development of children, yet, however carefully a child may be brought up from infancy, environment cannot do everything when the child is mentally defective. I have known children brought up in the most satisfactory environment, who have been well enough to go to school, have been sent away for misbehaviour, and who in spite of everything which care and wealth could do, have turned out to be liars and thieves.

Although heredity has such a profound influence in the causation of mental defectives, there are two classes of mentally defective children whose condition may be brought about by other causes. One is that of a child brought into the world after a long or difficult labour, when the mental development seems very prone to be interfered with; and the other that of the last child of a large family, when the mother may have been worn out by repeated labours. In both these classes there may be no neuropathic history on either the mother's or the father's side.

The Mental Deficiency Act of 1913, which does not extend to Scotland or Ireland, includes under the term "mentally defective" idiots, imbeciles, feeble-minded persons, and moral imbeciles, or those who from an early age display some prominent mental defect, coupled with vicious or criminal propensities, on which punishment has little or no deterrent effect.

The desire of all who seriously consider this matter must be not only to do what is best for these defectives, but to stop their propagation. In this Act defective children are included over the age of 7 and up to the age of 16. By the age of 16 there is ample time to be reasonably certain how much benefit can be effected by treatment, by segregation, mental hygiene, or any method deemed advisable in any individual case. The Act mentioned is an elaborate one, drawn up with the view of taking every care of the mentally deficient. On careful reading it will be seen that the Government has spared no expense in endeavouring to carry out treatment, whether by giving to the Board of Control authority for establishing and maintaining institutions, or, with the approval of the Treasury, acquiring any land or erecting any building. Moreover, careful regulations are drawn up as to the management of institutions for defectives, including—and this is important—the study of improved methods of treating mental deficiency. Therefore it may be safely stated that at the present time in this country mental defectives have as much care bestowed on them as is possible in any public or private institutions, and, of course, the cost to the State is enormous, although it is provided that, unless Parliament otherwise determines, the aggregate amounts so paid shall not exceed £150,000 in any financial year. Since this Act has been in force experience may suggest improvements. It is possible there may be still defectives existing for whom the Act does not provide sufficient care or training; nevertheless it has been carefully drawn up, giving full authority to the Board of Control, and yet, notwithstanding these methods of treatment, the number of cases is on the increase.

Now although I have mentioned what the cost may be, I feel sure that no one would wish to diminish that amount if benefit accrues from the treatment adopted. I consider it highly desirable that any amount of money should be spent where there is any chance of doing permanent good, and by the time a girl or boy arrives at the age of 16 sufficient evidence has been gained of the mental state to see whether any real benefit has been effected by the amount of care and attention bestowed. If there be

indication that the child can ever be looked upon as normal, or approaching to normal, then, in my opinion, and in that of many others, especially in America, steps ought to be taken to prevent that child ever becoming a parent, for it is certain that the offspring would be defective.

Although this simple operation should be carried out, care would not be relaxed in treatment, which would be carried on as usual.

With a number of these mental defectives segregation must be resorted to, and it is of the utmost importance that both males and females should be closely watched, so that they may not escape from control, for a girl runs the risk of conception, to be followed by an illegitimate child. It is quite extraordinary how prolific these mental defectives are, and they reproduce their kind from two to six times more rapidly than those who are normal. It may be thought such supervision is exercised that girls cannot escape from it, but we know that they do, and in those defective supposed to be well enough to be looked after by their relatives opportunities will easily occur for evading observation, with the result that the girl may repeatedly conceive, and bring forth many illegitimate children, who will in turn be mentally defective. In addition, they run the risk of venereal infection, and of spreading it indefinitely. In those girls who are slightly defective, and in the opinion of the mother or relative well enough to contemplate matrimony, the marriage is followed by the birth of mentally defective children. In my opinion there is only one way of doing really permanent good, and that is by sterilization of the mentally defective. This must be considered under (*a*) sterilization of children, and (*b*) sterilization of adults.

(*a*) *Sterilization of Children.*

If a child be found to be a mental defective it will have the care necessary, either from a private or public institution, for the Act referred to is responsible, and, after the age of 7, Section 1 of the Elementary Education Act, 1914, provides for education. But supposing the child reaches the age of 16 to which I have referred, and in spite of all the time spent in its education and the attention devoted to its welfare proves to be mentally defective, with no hope of permanent improvement, in my view the child ought to be prevented later on from becoming a parent, and of being the means of bringing into the world children more or less defective.

Let me say at once that my suggestion is only intended for those upon whom every possible means of treatment has been tried, whether by education or segregation, so that it does not exclude treatment from the earliest moment by mental hygiene, the National Council for which is already doing so much good, and from whom so much is hoped. Needless to say, this sterilization would only be carried out after the subject had been passed by one or more alienists, and in any case with the least chance of improvement the age could be extended beyond 16.

In the American States there are said to be 250,000 mentally affected in hospitals, with 50,000 admissions every year. Every precaution is taken when sterilization is carried out. In this country it would only be necessary to add a section to the present Mental Deficiency Act, making strict regulations to ensure the safeguarding of the subject.

Now, having said that there is no question of sterilization in those cases in which there is any chance of the individual becoming normal, I maintain that sterilization is a perfectly humane method of treatment, for while still endeavouring, after the operation, to do all in our power medically for the unfortunate subject, we also wish, for the sake of the State, to prevent the propagation of the unfit. This, from a State point of view, is of the greatest importance.

(*b*) *The Sterilization of Adults.*

For this a State certificate of marriage must be the first step, because, until a defective contemplates marriage, the necessity for sterilization does not arise, and it is evident that it would only be necessary in dealing with adults for a certain time, for if legislation is brought about there would be no need to discuss it, for the reason that all defective children would have been previously done. A State certificate of marriage only means a medical certificate of health given to each about to marry. In the event of the *Spirochaeta pallida*, gonococcus, or tubercle bacillus being discovered, postponement of marriage could be adopted. But in the case of a feeble-minded man or woman, or those having such a family history of insanity as would render in the highest degree probable mentally defective children, one or both could be sterilized before granting a certificate. This prevents the unhappiness which forbidding marriage might cause, while at the same time guarding against the advent of children who might be a burden to the State. It would not increase illegitimacy, for the percentage of women who would voluntarily risk illegitimate children, when marriage could take place, is small.

It is important to bear in mind, with reference to marriage, that all defectives do not want segregation or special control, and that it is not always easy to say at once that a man or woman desiring marriage is defective. Time does not permit me to go into this more fully now, but I would say that the only ones who can speak with authority on mentally defective children and the results of treatment are those who are continually working with them or the superintendents of institutions for the feeble-minded, and the latter assure us that, notwithstanding all that is done, the majority are never really cured. Dr. Paul Bowers, the superintendent of the Northern Hospital for the Insane, Indiana, says that the degenerate, the feeble-minded, and the imbecile, will remain as they are, no matter how much we do for them, and that "this is the experience of all superintendents of institutions for feeble-minded."

Again, some people believe that modern civilization, by its Poor Law system and its treatment of the unfit during childhood, tends to foster the growth of this class. I maintain, however, that by sterilization, which does not change the life of the individual in the slightest degree, we can get rid of this class almost entirely, and as the years roll by there would be, as compared with the present day, little need for the operation, because we should have the advent of healthy children. It is certainly the safest and most effective course.

It so happens that the vast majority of those with whom I have discussed this subject are in favour of sterilization of the unfit, but naturally we all know well the difficulties which would have to be overcome, and perhaps those in opposition to the suggestion base their opinion on sentimental grounds, and "interference with the liberty of the subject." But it is right for that liberty to be encroached upon when it is a matter of health and the protection of the community, for when these defectives grow up they may become a danger to others, and the enormous advantage to the State of doing away with all these mental defectives cannot be weighed in the balance with any such arguments. We cannot get away from the fact that there are two-thirds of defectives whom we shall never benefit, but who have the power of rapidly reproducing their kind, who in turn become a burden and expense to the State. It is perfectly true that those who are segregated, and who are a danger to others, must still be guarded, but it is evident that in the end the vast majority of defectives would die out.

I do not propose to sterilize the parents of mental defectives, for that would be retrospective, and those living at the time of legislation would in a few years have ceased to bring defectives into the world. I cannot see that if, amongst the many thousands of these defectives, occasionally one turns out to be a genius, it is any argument against endeavouring to prevent the propagation of the mentally deficient.

It may be said that the Mental Deficiency Act requires amendment in various ways, and that if this Act and the Defective and Epileptic Children Act were more effectively operated, improvement might occur; but the fact remains that, notwithstanding these Acts, the proportion of mentally defective children to the entire population is undergoing steady increase, and it cannot be denied that this is a serious social problem.

Again, it may be argued that if segregation be efficiently carried out, it will be as effective as sterilization, and although we know that this would be true in the case of

those segregated, we have to remember that we must deal with many who are not segregated, and never will be. Careful regulations for sterilization would be drawn up, and the operation never performed except, as already stated, with the sanction of one or more alienists.

Let me say in conclusion that if there be any more effective methods of treatment, by all means let them be adopted, but considering the perfectly appalling increase in these cases, and the fact that whatever treatment has hitherto been carried out has been insufficient to lessen these numbers, in my opinion it is time to try something which may prove to be more radical, and that therefore sterilization should be given a fair trial—one which must naturally extend over many years.

It may be that even this treatment may not be the final solution of the problem, and I am sure that if found wanting the members of our profession have too much good sense to allow it to continue. The laws of inheritance and the most careful statistics alone would prove whether sterilization of the unfit is really effective, and, if adopted, ought to continue, or whether it should be banished as a failure.

W. NORWOOD EAST, M.D.,
Senior Medical Officer, Brixton Prison.

THE INCIDENCE OF CRIME AND MENTAL DEFECT.

THE practical working of the Mental Deficiency Act has now been effective for a sufficient time probably to enable a fair estimate to be made as to the incidence of crime and mental defect.

In my view it is of first importance to be correctly orientated on this matter. Hyperenthusiasts are liable not only themselves to expect impossible benefits from the Act, but to lead others also to share their views, and unless it is clearly recognized from practical experience what the Act can, and cannot, do in the prevention and treatment of crime, an unfortunate reaction may ultimately set in, and the beneficial results actually obtained become disregarded. For it is obvious that those sections of the Mental Deficiency Act dealing with crime will only be utilized by the judicial and administrative authorities so long as they, and the public, are satisfied with the results. Such satisfaction cannot in the long run be gained and maintained if we anticipate greater achievements than actual facts permit.

It would appear from the writings of some authors that the majority of prisoners are insane, defective, or psychopathic. Darrow of Chicago, for instance, in his recent work on crime, says, "There is no longer any question that a large number, say probably from 10 to 20 per cent., of the convicted are in fact insane at the time the act was committed, and that the demented, the imbecile, and the clearly subnormal constitute more than half the inmates of prisons." Dr. May of the Boston State Hospital, in his recent valuable book on mental disease, records that "27.5 per cent. of the prison population as a whole have been found to be mentally defective."

I do not presume to criticize these American figures, but similar statements are made from time to time as applying to this country—statements the Mental Deficiency Act has shown to be erroneous if we accept the statutory definitions of defect as embracing the various forms of amentia, and statements, moreover, which are liable to be injurious, for they suggest that our present methods of treatment can prevent a larger amount of crime than is in fact possible at the present time.

It is essential in dealing with crime to discriminate between mental deficiency and inefficiency. The Mental Deficiency and Lunacy Acts provide for the rational treatment of the defective and insane criminal, but a large group of mental inefficients, consisting of subnormals, cases of undeveloped psychoses, psychoneuroses, and neuroses, remain outside the scope of these Acts. At the present time the scientific treatment of this group of criminals is unfortunately prevented by economical considerations, but it is important to bear this in mind constantly, and not attempt to stretch the definitions of mental deficiency to include any of them; otherwise the true defective may suffer from the consequent administrative and judicial difficulties and complexities that will arise. Moreover, as further progress in the treatment of the mentally inefficient criminal lies in the direction of this border-line and psychopathic group, its existence should be insisted upon at all times, and clearly distinguished from the defective and insane, both in the witness-box and elsewhere.

We are only concerned here with amentia, and the number of criminal defectives in England and Wales (that is, defectives who reach prison) is considerably less than is often supposed. During the year 1921-22 of 66,715 prisoners of all kinds received into prison 223 were certified as mental defectives. In the year 1922-23 of some 60,983 prisoners received the number of defectives certified was 246.

Brixton is a remand prison, and to us are sent all the male remand and before trial prisoners in London, Middlesex, Surrey, and portions of Kent, Hertford, and Essex. Therefore we receive our cases from several million of the population, and deal with considerably more insane and defective prisoners than any other prison, a large number being remanded solely for a psychological examination. In this work I am assisted by two skilled whole-time colleagues. During the two years April 1st, 1921, to March 31st, 1922, and April 1st, 1922, to March 31st, 1923, respectively, 8,277 and 7,740 remand and trial prisoners were received. Of these, during the first year 792 were remanded for special psychological examination, of whom 72 were certifiable as mental defectives under the Act. In the second year 725 were remanded for a similar examination, and of these 67 were certifiable. This comparatively small number may be taken, I believe, as an accurate estimate, for our cases are examined also by the county medical officers, with whom we find ourselves in entire agreement as to diagnosis. The county medical officer and prison medical officer are liable to regard the cases from somewhat different angles, and some disagreement might be expected, perhaps, but the fact that there is none is, I think, reasonable testimony that the figures quoted may be relied upon as fairly representing the facts.

Rarely a case in whom no report by the court is called for and in whom nothing indicative of defect has been noted on the reception examination or during detention may escape diagnosis, and a certain number of elderly prisoners are met with in both remand and convicted prisons who would be certifiable under the Mental Deficiency Act if any history as to early age was available. But such cases, although to some extent increasing the figures I have given, would not alter the end-result—namely, that the mental defective is not met with in prison in the large numbers which some accepted before precision and standardization in diagnosis were acquired by the passing of the Act.

The individual psychological study of prisoners has been conducted for very many years in certain prisons, unrecognized outside official circles; but the Act has brought the necessity for such study forcibly to all those dealing with crime, and it is reasonable to suppose that some slight increase in the total number of prison defectives may be found in future, as the influence of the Act in preventing crime becomes more fully appreciated generally.

The defective is less frequently met with in prison than the insane. This is so not only in Brixton, but is shown by the total figures of the last five years referring to the prisons throughout England and Wales; the fact is noteworthy, for the number of defectives in the country is said by Dr. Tredgold to be slightly in excess of the insane. A gratifying feature in the general prison figures is that the proportion of defectives certified under Section 9 of the Act (after conviction) is steadily falling, whereas the number certified under Section 8 (before conviction) is steadily increasing.

A mere consideration of figures such as I have given fails to represent the amount of benefit arising from the Mental Deficiency Act in its relation to crime. It has amongst other things demonstrated the relative value of intelligence tests, and shown that certification in criminal cases ultimately depends upon a capacity to earn a living and abstain from crime. It has demonstrated more clearly the difference between deficiency and inefficiency, between the defective and the subnormal. It has shown that no criminal offence is pathognomonic of defect; that, for instance, arson, which was at one time regarded as being particularly

a crime associated with defect, occurs comparatively rarely, only five times in a series of 200 consecutive criminal aments examined by me. It has shown that every class of crime—except, in my experience, the rare crime of treason—is committed by defectives, and that the largest number are crimes of acquisition, sex, and vagrancy. I have mentioned frequently elsewhere the ease with which a defective, having committed a criminal offence, forms a criminal habit; indeed, in certain cases it can be definitely stated that the offence will be repeated unless adequate treatment is adopted, but I mention it in this connexion once again, for by early diagnosis and certification the criminal ament is prevented from becoming a recidivist; and when it is remembered what a large class such cases form in prison it becomes manifest that the influence of the Mental Deficiency Act on crime will increase as time passes, and is being felt, indeed, already. In fact the amount of crime prevented by the Act is much greater than the actual figures suggest.

It is in the prevention of crime by the early diagnosis and treatment of mental disease, disorder, and defect that the alienist can assist most usefully in attacking the criminal problem, and the importance of this cannot be exaggerated. Quite recently, of six men under my observation at the same time awaiting trial for murder, three were insane, and early diagnosis and treatment would have prevented the murders. And of those cases of defectives who have been under my observation charged with murder none presented difficulties in diagnosis to the expert examiner, and similarly with the majority of defectives who commit lesser offences.

The growing importunity of medical men to secure that the mental aspect of offenders is taken into account can only be fruitful if reliable results follow their recommendations. This requires an accurate perspective to be preserved, and it is essential not to expect results which are unobtainable. The Mental Deficiency Act was referred to at the Annual Conference on Mental Deficiency at Caxton Hall last year by Mr. Stuart Deacon, the stipendiary magistrate of Liverpool, as "one of the greatest boons which the British Parliament has ever conferred upon His Majesty's subjects, and more particularly upon the poorer members of the nation." Medical men whose work lies in criminal courts will be in entire agreement with this. So convinced am I of it myself that the burden of my remarks to-day has been the expression of a hope that over-enthusiasm should not endanger its constant application in the criminal courts.

C. MACFIE CAMPBELL, M.D.,
Director, Boston Psychopathic Hospital, U.S.A.

Organization for the Supervision of Mental Defectives.

Dr. C. Macfie Campbell said that the hospital with which he was associated was somewhat similar to the Maudsley Hospital in London, and had 110 beds. Part of its responsibility, as in the case of all the State hospitals in Massachusetts, was to supervise the school population of a certain district and to see that all the children in that population, if there was any suspicion of mental defect, were systematically examined. It was part of the responsibility of his hospital service to go to the schools in a township of about 40,000 people, with a school population of rather more than 5,000. The children were brought forward by the teachers, and an opinion passed upon them. This work was not limited to the one township, but was now State-wide over the whole of Massachusetts. It had only lately been put into operation, and what the later social effects would be, how far they would be utilized, and what modifications might be necessary, was, of course, a matter for further experience to determine.

It might interest the Section to know what the procedure was. The diagnosis of mental defect was an important matter, although, as Dr. Potts had said, many judges on the bench felt that the natural common sense of the judicial mind was adequate for a diagnosis. In Massachusetts a somewhat elaborate investigation was made, in the first place, into the family history of each of the children and the stock from which the child had come, also the environmental factors and the school history. The medical man made a physical examination, and the teacher a special investigation into the general information of the child. The psychologist also made a standard psychometric examination. On the basis of such an investigation a summary of the case was drawn up and the mental equipment of the child considered, and certain advice given. He showed the dossier of one child as a sample. This was a girl of 14, whose mental age was 8.8 and whose intelligence quotient, therefore, was 62 per cent. The child had reached the limit of her scholastic ability, and it was very doubtful whether she would profit by ordinary grade work. It was found that she had congenital syphilis. She was already in touch with a hospital for treatment. Her home situation was extremely poor; they therefore had to see that it was modified so far as it could be modified, and it was recommended that her training should be along special manual and industrial lines.

What was the use of this sort of work? How were they going to translate it into practical terms? Was it worth while? It was a time-consuming affair. It meant that the physician spent several hours with each child, first on the physical examination and then on the correlation of various data; that the psychologist spent at least an hour with the child in going over the standard test; that the social worker had to have at least one interview with the parents; and that the school teacher devoted some time to the individualized study of the child. For each child there was formed a little clinic of six persons—on the hospital side, the physician, the psychologist, and the social worker; and on the school side, the school doctor, the school nurse, and the teacher. A certain number of the pupils brought forward were of such a grade of mentality or were constitutionally endowed so meagrely that obviously they required special care and attention. Up to now it had generally happened that those who had got special attention and care were not those separated out by systematic examination, but those who were a nuisance. The nuisance in life was always the one who got special attention, if not as a mental defective then as a spoilt child. If he was a mental defective he got an education which had some sort of relation to his mental equipment; he got, what perhaps in time all children would get, an education which had reference to his endowment and to what he was going to do afterwards. That principle might spread from the defectives until presently it reached the universities! Perhaps most of what educationists had learned with regard to general education of recent years came from the defective child, so that in all this matter of special care they were merely returning something to him to which he was well entitled.

If these mental defectives had certain tendencies so had we. If the mental defective was a potential criminal, so were we all. "There, but for the grace of God, goes John Bradford." And the grace of God in this instance was translated into terms of nutrition, education, and social opportunity. What was it that made the child with poor opportunities drift into delinquent habits, the girl become an unmarried mother, the man a vagrant or an alcoholic? Take the history of the neglected defective child, grinding through the pedagogic mill, scolded because he could not learn what he was never meant to learn, disheartened because he could not keep up with the others, therefore escaping at every opportunity from school routine, becoming a truant, associating with all the undisciplined members of the school, and because of his defective mentality being made the tool of the unscrupulous and the ethically inferior—there one had the defective delinquent in the making. In his teens, guilty perhaps of repeated delinquency, he passed from the pedagogic into the judicial mill, and there was judged according to the statutes, and, having committed a certain crime, suffered its adequate punishment. The community was only just beginning to think that here was a human being whose circumstances and behaviour ought to be carefully studied before any course of action with regard to him was decided on at all. By the time such an individual had had several experiences with the courts one had the confirmed criminal, but this later career of his was along the grooves which had been determined by the social management of the case, not by the original endowment of the child.

On the other hand, take the truant child, disheartened, mischievous, backward, and examine his endowment, find out what would interest him, and what he could do, what his powers of attention were, how long he could attend without undue fatigue, and what special ability he had; then give him an environment in which he could develop his abilities, such as they were, not trying to grow figs on thistles, but giving the thistle as good a soil as it could utilize, and one would have a happy, contented, docile, productive individual, doing work, manual and not of a high grade, but such as was very useful to society and to himself. After all, the personal comfort of the other members of society was to a large extent dependent upon those who had not enough initiative and outlook to be discontented with the small manual tasks.

The speaker supposed it was not as necessary to mention to that audience as to audiences on the "other side" the danger of applying in a rigid way any schematic psychometric standards to individuals—of saying, for example, that because a child had an intelligence quotient of 70 or 75 per cent., therefore it was necessary to do this or that. Experts had told them that, applying these tests in a certain factory, they had found half the operatives mentally deficient, greatly to the astonishment and dismay of the manager, who said that these men were his best workers, contented, loyal, and steady, and that he could not run his factory without them. In all these estimates attention must be paid to the environment and to the individual's adjustment thereto, as well as to the individual considered as a person apart.

With regard to segregation, he thought that one of the psychological motives which made the public eager for measures of segregation had been omitted by Dr. Devine. People were impatient of the atypical in their midst because the presence of these people hindered the smoothness of their own lives. People did not wish to be bothered with these defectives, and if they were bothered they wrote to the newspapers or rung the municipal authorities up on the telephone. These defectives annoyed us, they upset our arrangements, and therefore we wanted them segregated in some place where they would not interfere with our garden parties. The speaker thought it very necessary to emphasize the responsibility of the community for its mental defectives. If the number of mental defectives were taken at 0.5 per cent., and were multiplied by the millions of the population, the total would certainly appear appalling, and institutional maintenance impossible. But if, on the other hand, they thought of that 0.5 per cent. being assimilated by each hundred, the problem was reduced to its true proportions. It was not too much to expect 200 people to look after a weak brother or sister with consideration, or those interested in the education of the children of such a community to see that the individual who was mentally retarded was given special opportunities, that his environment was taken into the educational purview, and that when this child left school some liaison would be maintained between the school and his industrial environment, so that the school might know where an adolescent of limited mentality might be placed, and a certain amount of supervision might be continued. Was it too much to look forward to the time when teachers, judges, and physicians would have some interest in these problems, and in every community people would join together in care for the mentally defective? In reading Keith's *Antiquity of Man* he noticed that in every part of England where any remains of the palaeolithic or neolithic period were to be found there appeared to be some local antiquary keenly interested in the subject. He wished that there might be in every community a group similarly interested sympathetically in the man of the steel age. There was a tremendous fund of goodwill and intelligence available in every community if it could only be organized.

It was part of the responsibility of the medical profession to see that these problems were faced. The patient had gone somewhat out of fashion for the last twenty years, owing to the advent of the laboratory animal, who was so much easier to handle. But in the study of neuroses the patient had been reintroduced. They had found that in treating a neurosis they had to treat a sick person at grips with destiny. These studies should be placed in the medical course at the very beginning. In the medical school it should be possible for the class to be transferred from the study of the individual organs to the study of the individual organism and the problems it had to meet. At the universities psychology was still being taught along purely metaphysical lines, forgetful of the fact that Aristotle, who was a great metaphysician, was also a great biologist. He wished such teachers would remember that the proper study of mankind was man—not merely the reaction times in the laboratory—and man, moreover, in relation to environmental conditions. When that was better realized, medical students would get an outlook on life which would be most helpful to the community, and the professions of law and teaching, and indeed every cultured person, would in consequence get a certain new insight into the responsibilities of individual citizenship.

SIR FREDERICK MOTT, K.B.E., M.D., F.R.S.

Heredity and Social Conditions among the Mentally Defective.

Sir F. W. Mott gave an account of a comparative inquiry on the heredity and social conditions among certain insane, mentally defective, and normal persons which he had initiated and controlled. The investigation was commenced some ten years ago by Miss Agnes Kelley in Haggerston. In 1915, under a research grant of £300 from the Board of Control, she continued the investigation in a more systematic manner in Bethnal Green. Sixty cases in each of three groups were examined, the first group comprising adult patients from the London County Council Mental Hospitals; the second, high-grade mentally defective children from special schools; and the third, normal children from ordinary elementary schools. The investigation was carried out, under the speaker's direction, at the Pathological Laboratory at Claybury. He could only state briefly the conclusions. A certain dissociation was seen between the types of stock that gave rise to insanity and those that gave rise to mental deficiency. Pedigrees of asylum patients showed considerably more insanity than mental deficiency among the relatives. Conversely, mental deficiency was very much more prevalent than insanity in the family histories of the special school children. There was more mental deficiency among the asylum cases than there was insanity among the mental defectives. The general level of intelligence and health among the brothers and sisters of special school children was poor, and distinctly below that of normal children. The intelligence of the children of asylum patients appeared to be more uneven, and though many were bright and intelligent, children who were erratic, unstable, dull, or backward were frequently reported. A great variety was seen in the type of stock in the asylum group. There were some pedigrees in which the individuals were living independent, useful lives, working at good trades, earning good wages, and intermarrying with respectable families; the patients themselves earning their own living and supporting their families before the mental breakdown occurred. There were at the other end of the scale families of a degraded type, the whole family low wage-earners, frequently of loose morals, living in poverty-stricken homes, and intermarrying with equally poor stocks. Such families had weakly, uncared-for children, and were intermittently on the parish. Good trades and high wages were even less common, and were, in fact, rare in the mentally defective group. Though there were some exceptions, the general level was poor, and there were many unskilled workers and casuals. There was a corresponding dead level of poverty in the home conditions of the majority of these cases, and the incapable (though often well-meaning) mother was very conspicuous in this group. In few of the asylum cases, and among still fewer of the mental defectives, could the home conditions be described as good, while one-third of the homes in each of these two groups were classed as "homes in which the food was quite inadequate, the clothing very poor, and bare necessities were lacking." The normal group showed a decided improvement in industrial conditions and in the care of the home and children.

and there were very few cases of intense poverty and neglect. There was a very striking contrast in the dependence on parish and charitable assistance among the families of the normal group on the one hand and of the insane and mentally defective groups on the other. The normals not only applied less often to the parish, but they were also less well known to charitable agencies. There was also, on the whole, a distinct difference in the degree of relief they received. The normal cases more often than not applied on account of temporary sickness only, while in the other two groups relief was frequently sought for maintenance as well. It seemed, therefore, that not only the insane and mentally defective persons themselves, but very generally their immediate relatives also, were less capable of maintaining an independent existence than the relatives of the normal cases. Very complete pedigree charts of three or four generations of these groups of cases were made by Miss Kelley, and a typical pedigree chart was exhibited by Sir Frederick Mott.

Nearly ten years had elapsed since the results of this investigation were published. He hoped that either the Board of Control or the Eugenic Society would appoint some competent person to take up again the investigation of these same pedigrees; for he believed very much useful information might thus be acquired concerning the fate of mentally defective children during and after a great and prolonged war.

The question arose, Could certain of these mental deficiency cases be uplifted, and how were such cases to be selected? The closest investigation would be necessary. It did not suffice for the social worker to undertake this unaided. The efforts of the social worker must be correlated with those of the medical man, who would devote attention to the child and to the conditions which had given rise to the deficiency. He had been very much interested in the relation of syphilis to degeneracy. He had occasion to examine in one of the pedigrees taken for the purpose of this investigation a child who had died, and he found the spirochaete of syphilis in every organ of the body. He had no doubt that a great many others would be found similarly affected. It was only by a close investigation on the medical as well as on the social side that this problem could be elucidated further.

Personally he was not disposed to think that sterilization was advisable—for this reason, that the people who were sterilized were not made in any respect better able to compete with their fellows. They would still want care and supervision just the same after sterilization as before. He agreed with what Dr. Campbell had said, that many of these persons could be made useful members of the community if taught properly to use their hands. A very important point emphasized by Dr. Campbell, with which the speaker thoroughly agreed, was the need for teaching in the medical schools a knowledge of human character. Some time ago the dean of the Manchester medical school wrote and asked him what he would advise with regard to the teaching of psychiatry, and he replied that he would advise a course of lectures on psychology applied to medicine at the end of the physiological course. After the war many men went into the practice of medicine utterly ignorant of the fundamental facts of human nature. He was sure that the airing of the whole subject at that Sectional meeting would do a great amount of good. Such facts as Dr. Campbell from the other side of the Atlantic had stated really went to the root of the matter.

GENERAL DISCUSSION.

Miss Evelyn Fox (Honorary Secretary, Central Association for Mental Welfare) said that there must be a very large proportion of defectives the greater part of whose lives would be passed, not in institutions, but in the free community, and these people must be protected and assisted because they especially would be subject to stress and strain. As early as possible in the life of the defective child it would be necessary for those concerned for his supervision to put to themselves the question, "Is this child going to be able to take a place in the community where he can compete with others in ordinary industrial life with systematized production, or have we to train this child for life in an institution?" The standard test for entry into the special schools should not be, "Is this child capable of benefiting by education in a special school?" It would be a reflection upon any school to suggest that a child attending it could not receive benefit. It was true that there were children who were capable of receiving far greater benefits than others. But the special school was conducted on lines which should make it possible for the child to take its place afterwards in the community, and the admission of children must be regarded from this point of view. The simple measure of institutional accommodation would not go far towards solving this problem. Institutions and colonies were necessary for conduct cases, for low grades, for the unstable and erratic, but for the majority of defectives there must be a constructive and well-thought-out system of care whilst in the community. The question of suitable education and training for community life then became of paramount importance. The untrained and uneducated defective was an economic waste; in the higher grades he was unfit for even the simplest mechanical operation, and in the lower grades a still more helpless burden. In all such cases, along with the maximum of economic unfitness, there went—a fact too little realized—the maximum of mental strain on the family. If defectives came, as they frequently did, from families of bad stock, with members predisposed to instability and mental trouble, this was all the more reason why an uncontrolled and undisciplined defective should not be added to the family burden. Some experience of cases in all classes, rich and poor, had brought home to the speaker the waste of the efficient in the care of the absolutely inefficient. To meet the problem the first necessity was a reasonably uniform standard as to what was meant by children who required special training. At present the standard was variable, dependent more upon the point of view of the individual examiner than upon anything else. There should be some machinery for the discussion of such cases by groups—groups not confined to school medical officers, but including also general practitioners, teachers, and social workers. Through such groups a practical working rule might be evolved, so that at any rate they would learn the size and bearing of the problem they were tackling. Then it was necessary to arrive at a simple working knowledge of what training could mean and could do for the defective. The common sense of training the defective could be acquired even by people who never practised it. Experts, both medical and educational, must be available to help in deciding what type of training a child required and what its future possibilities were. A certain standard capacity for taking a place in the community should entitle a child to a highly specialized form of teaching. Training must begin early in the home or school and might continue for many years, right into adult age. It must be continuous, and if the strain of life in the community was too great for the defective there must be some means of recalling him into a hostel or half-way house. A great deal of care was needed also in the provision of handicraft classes and suitable mechanical work for each case. The organization of suitable work for defectives ought to be undertaken experimentally as soon as labour conditions became normal.

Dr. Joseph F. E. Prideaux (Mental and Neurological Inspector, Ministry of Pensions) put forward certain objections to the policy of sterilization which had been advocated by Dr. Gibbons. His first objection was that there would be enormous difficulties in deciding who was to be sterilized. The present difficulties in deciding who was to be segregated were great enough. Moreover, the only persons whom they could with any absolute certainty at the present time decide to be fit cases for sterilization were just those persons who would need segregation also on account of their antisocial tendencies. Further, if the figure for mental deficients in the population be taken as 3 or 4 per 1,000, it had been computed that on that basis some 10 per cent. of the population, who were carriers of mental defect, would have to be sterilized. Moreover, no really good result would be forthcoming until a very long period had elapsed. In the meantime, therefore, it was necessary to consider educational methods, and these must

be regarded from the point of view of the child, of the State, and of the race.

From the standpoint of the individual there could be no question whatever that it was the duty of the community to go ahead and do all it could for all defective children, but from the standpoint of the State and the race the question arose as to whether the education of the mental defective could be justified on the ground of expense. The expense was stated to be £75 per annum for each child in a residential school, and £25 per annum for each child in a day school. His experience as medical officer for a residential special school had convinced him that the education of the higher grade child was more than justified. From the race point of view, of course, it was possible to urge that education was not only a waste of time and money, but was actually harmful. There were at present in England and Wales 201 special schools, with accommodation for 16,266. As the number of children ascertained to be defective by the Board of Education was 31,000, some 15,000 at least had to be provided for, and he believed this figure to be much too low. In the London special schools there was accommodation for 1½ per cent. of the total number of school children, and if this were taken as a guide in estimating the number of defective children in England and Wales the figure would be 80,000 defective children, for only 20 per cent. of whom there was accommodation in special schools.

The first of the causes for this lack of provision was an absence of co-ordination between the different local authorities, and the second the ignorance of the medical profession. The medical student went through his curriculum—certainly in the speaker's own time—without hearing of mental deficiency or knowing what it meant or how to diagnose it. He quoted some remarks by Sir George Newman in *Medical Education in England* to the effect that although the general practitioner stood in somewhat peculiar need of knowledge of mental conditions, yet at present the student was taught nothing of the make-up of the normal mind, and that the medical student ought to be given a clear account of the content of modern psychology in language free from the mere technicalities of provisional hypothesis. Therefore (said the speaker) it was evidently the opinion of the Ministry of Health that what was wanted was something in the way of education in psychological medicine for the medical student. This was still more important when it was remembered that there were some 2,000 medical officers, whole or part time, engaged in the school medical service. The third cause for the present lack of provision was absence of accommodation, and the fourth the difficulty of getting and training teachers, for it was impossible to educate these children without a specially trained teaching staff. Next came the vagueness of the definitions in the Act and the lack of uniformity in the standard of educability. He reminded the Section of the duties of the local education authorities under the 1899 Act, with its definition of defectives, but said that at present it was not known where to draw the line between the dull and backward child and the mentally defective child, or between the defective child who was educable and the imbecile. The first point, before dealing with any question of methods of education, was to determine what children were to be educated. Dr. Campbell in his admirable speech that morning had passed a little too much ridicule on the definite demarcations that had been laid down for different grades of mental defect. The speaker thought that the failures that Dr. Campbell got in America were possibly due to the fact that the standards there were higher than those in common use for children in this country. It was necessary to have a uniform standard of educability well laid down to pertain to every area in the country. Another point was that education was of no use whatever unless the child was going to be provided for when the education was finished. It was the usual practice in London not to notify any child unless that child's mental defect was very marked; this meant that many children went out from school without any supervision or any provision of employment or assistance. Under the Trade Boards Act it was possible to employ mental defectives at a lower wage, but the difficulty at present was the fear of exploitation of the mental defective. Some method of placing children in employment, in addition to notification and supervision, must be applied, with possibilities of graduated payment, and safeguards against exploitation of the defective.

The speaker was unable, owing to the time-limit for speeches, to cover all his points, but he urged in conclusion that in order to arrive at the accurate diagnosis and classification of types of defectives it was necessary to educate medical students and to institute post-graduate courses.

Dr. E. LEWYS-LLOYD (Towyn, Merionethshire) congratulated the officers of the Section on their splendid programme and on the very high quality of the papers. The expression had frequently been used in the discussion, "the education of the medical man." He feared that the medical man needed educating so far as mental deficiency was concerned. On taking up his present appointment as a medical officer of health he had to confess that, although he knew something of lunacy, he knew so little of mental deficiency that he felt it necessary to attend special courses, and he thought the same thing must be true of the average medical practitioner. Too often an effort was made by some visitors to obtain the discharge of cases who were certified for antisocial conduct, especially sexual offences, on the ground that in the institutions they were performing very useful work and should be earning their living in, say, domestic service, and so save expense to the State. He did not think that this was a sound policy.

Sir JOSEPH VERCO (South Australia) referred to the number of mental defectives in the population, not merely those of school age, but those who had left school, and who would remain mental defectives all their lives, also to the various degrees of mental defect, from absolute idiocy to a slightly subnormal mentality. These two circumstances constituted the great difficulty in dealing with them, first, as regards their education, which demanded separate classes and perhaps separate teachers, even in comparatively small schools; secondly, after leaving school, as regards their vocational training, which would require special institutions; thirdly, after they were full-grown and fully taught, when they were still mentally defective and required supervision, either by segregation in an institution or by special and continuous oversight in their homes or their workshops or both. This was necessarily a costly undertaking, but would probably be the cheapest and the best and most humanitarian method of caring for them. He was not persuaded as to the desirability of sterilization, and he thought this method should not be performed until such continuous care and supervision as he had spoken of had been given a full trial.

Mrs. HODSON (Eugenics Education Society) considered that Dr. Macfie Campbell's remarks about the slow, silent work of nature in removing by the third generation or so the mentally defective offspring were rather misleading. The researches to which Sir F. W. Mott had drawn attention showed rather a different state of things. In working out the heredities of families quite a number of pedigrees had been found in which four generations had shown quite clearly, if not the same type of mental defect, at all events some abnormality which made public assistance necessary. In many stocks mental disorder was singularly richly scattered. The processes which held good in past times whereby, through apparently cruel means, the race was kept pure, no longer operated to-day. For how long this natural law had been set aside it was not possible to say, but undoubtedly it was set aside now. Not only had families been found in which there was a strong mental defect persisting through four generations, but a number of families of high mental quality, individuals attaining to the level of genius, had been known to disappear or nearly disappear by the third generation. Sociologists everywhere should urge that the most careful records be kept so that the hidden factors at work might be better discovered, and some factor of selection be called in to

replace that slow silent process of nature which certainly was no longer acting in a beneficial direction. With regard to sterilization Dr. Prideaux had suggested as a reason why sterilization should not be thought of seriously that to-day 10 per cent. of the community would require to be sterilized. She did not think that was really a sound argument. If to-day we were preserving and propagating mental defectives and in order to purify the race the sterilization or segregation of 10 per cent. of the community was necessary, what percentage of the community would require to be sterilized or segregated two generations hence? If the disease was very grave and the cure also very grave as well as difficult, we had either to grapple with the difficulty of the cure, involving the segregation of a large part of the community, or to succumb.

Dr. R. A. GIBBONS, in reply to questions, said that it was absolutely wrong to affirm that the sexual feeling was in any way affected by sterilization, but sterilization must not be confounded with asexualization, in which the reproductive organs were removed, when, of course, sexual feeling disappeared. Sterilization in the manner he advocated meant not the slightest difference in any way to the feeling of the individual. To a member of the audience who challenged the statement that the number of feeble-minded persons was on the increase, Dr. Gibbons could only give the number of notified insane persons in England and Wales, which on January 1st, 1922, showed an increase of 3,370 on the figure for January 1st, 1921, and this again showed an increase of 3,580 on the corresponding figure for 1920.

The PRESIDENT said that these figures related to insane persons; there were really no satisfactory statistics of mental deficients. But it could be stated as a fact that the fecundity of mentally deficient persons was from two to six times the normal.

THE PRESIDENT'S SUMMARY OF THE DISCUSSION.

The PRESIDENT (Dr. H. B. Brackenbury) said that, according to the practice in the Section in former years, it now fell to his lot to sum up the discussion. He doubted whether such a task was at all possible; all that he could hope to do was to indicate one or two of the facts which the discussion had elicited. Mental deficiency was mixed up with other social problems, and it had been borne in upon their minds that there were very many cases of crime and intemperance and antisocial behaviour with which mental deficiency had nothing to do, and it was quite possible that they had tended in the past to overestimate mental deficiency as a causal factor in antisocial conduct. No doubt mental deficiency was at the back of all the social evils to some extent, but there were also many other causes which brought those evils about, and, correspondingly, by no means all feeble-minded persons were likely to behave antisocially. Some of them were so very feeble-minded that they were not capable even of so acting, while others were in such a favourable environment that antisocial action was almost ruled out. Therefore, while antisocial behaviour had many other causes besides mental defect, a good deal of mental defect existed without antisocial behaviour.

If they went on to classify mental defectives from the point of view of community control, and not from the scientific view as to the nature of the defect, he thought it could be said that there were a considerable number of defectives who did not require such control at all. They were those who were placed in such favourable social and economic conditions that they could be properly cared for without any intervention on the part of the community. Mental deficiency was not necessarily confined to any one class, and there were mental defectives who could be looked after without community control, provided that the parents or guardians were properly instructed in such supervision and knew where to get help when necessary.

Then there were the defectives with regard to whom the community must step in, but who, nevertheless, might continue their lives as members of the community, not necessarily segregated therefrom, and there were those others for whom segregation in an institution or a colony was the only course. The defectives in both these classes required from first to last some degree of supervision. How was this to be provided? With regard to supervision in the home or the community he thought that more use should be made of guardianship. Guardianship under the Acts had been used very lightly indeed, and perhaps that was because a local authority, desiring to place a child under guardianship, could not be sure that the proper guardianship for the child was obtainable. If by instruction and training a body of persons who could properly be guardians in the strict sense of the word were got together the result would be to advance the administration of the Mental Deficiency Act. The Central Association for Mental Welfare was providing various sorts of training in short courses; here was an opportunity of providing a short course for potential guardians, and the number of suitable persons for such an office might thereby be increased.

As one who had had a good deal to do with educational administration he felt that there was some danger of the special school being used wrongly and uneconomically. The special school ought to be kept mainly for one class of case, and in a subsidiary way for another class. It ought to be kept mainly for the higher grade mental defectives, and secondly for those doubtful cases which had to be observed for six months or a year before it was quite certain what their possibilities were. Unless the special schools were used in that way certain dangers would be run. One danger was becoming very evident. On account of the economic situation new special schools could not be obtained, and the Board of Control and the Board of Education could not by a combination of pressure get the local authorities to provide such schools at the present time. If, however, all those who did not come within the categories he had named could be got out of the special schools, a considerable number of places could be released in which to put properly classified persons. The definition of ineducability in the Act ("unable to profit by the teaching of the special school") was a worse than useless definition. Imagine the responsibility of any teacher or medical officer having to certify that a certain child was unable to profit by remaining in that school! Of course the child was able to profit by remaining in that school. The criterion he would like to apply was that the child to be instructed in a special school was one who was likely, as a result of the institutional care, to take a place afterwards in the community with some economic result. If the special schools could be used in this way then it was worth while spending money on those children, and giving to the schools the best equipment and the most highly educated and skilled teachers. But this equipment and teaching ought not to be wasted on people who were going, after all, to remain always in an institution. For them there ought to be some more suitable and economic provision.

Another question which had come out in the discussion was whether mentally defective persons ought to be segregated from the community for the sake of the race. He was bound to say that Dr. Devine was a little too optimistic, and that there was a case to be made out for the complete and permanent segregation of anybody who had been discovered to be mentally defective. At the same time this was not practicable. For the present there would be numbers of these persons placed out, under competent supervision, in the industrial world. But, speaking from the point of view of heredity only, he thought a greater effect would be produced by segregating completely those who had been discovered to have this defect which was ineradicable. The more this subject was looked into the more certain aspects of it appeared to be disappointing. Although it was perfectly true that the offspring of two mentally defective persons were always mental defectives, and that when one of the parents was a mental defective the offspring were very likely to be defectives or mental deficiency carriers into the next generation, yet, having eliminated all these, it would be found that only a small proportion of the whole mentally defective population had been accounted for. Formerly it was hoped that with complete segregation—or, as an alternative, sterilization, but he would prefer segregation—of mentally deficient people, so that they were prevented from becoming ancestors, the mentally defective

population would be rapidly eliminated. But this was not so. The mentally unstable and excitable, the eccentric, and all those persons who could not properly be called mentally deficient, were liable to become the progenitors of mentally deficient children. A considerable proportion of the people who were apparently normal did produce mentally deficient offspring. Thus there was a good deal of the unknown about this matter. The more such inquiries as that to which Sir Frederick Mott had directed attention were pursued the better, and it was well worth the while of the Board of Control or the Government to subsidize through some channel or other similar researches.

There was a discrepancy between Dr. Devine and Sir Frederick Mott. Dr. Devine argued that insanity and all minor degrees of mental instability were almost equally liable to result in the production of mental deficiency in the next generation. Sir Frederick Mott, however, showed that there was a differentiation between the ancestry of the insane and the unstable and the ancestry of the mentally deficient. All they could say at present was that these inquiries ought to be pursued, and that they held out a promising field by which they could get to know a great deal more about heredity in this connexion than they knew at present.

Personally he was of opinion that segregation was the proper method of control rather than sterilization. But it was worth while clearing up certain points with regard to the latter method. Dr. Gibbons had said—and the words so impressed him that he took them down—that sterilization did not alter the life of the individual in the slightest degree. This brought them at once to the difference between the methods of sterilization. The complete removal of the essential sexual organs would make a difference to sexual desire, but the more usual method of sterilization would not make any such difference. If, therefore, the sexual desire remained unaltered, the large proportion of sexual offences committed by these mentally defectives would remain. What, therefore, was gained by sterilization so far as the immediate case was concerned? Even with sterilization there would have to be just as much segregation as before, possibly more, because nobody knew what the effect might be upon the internal secretions which appeared to govern these matters. Therefore one had not really helped matters economically by sterilization, and one had perhaps given a false sense of security amongst the people immediately concerned and amongst society at large which might easily lead to the increase rather than the diminution of venereal disease among this class. When, therefore, it was remembered how little was known about heredity in this connexion, when it was realized that the effects of sterilization must in any case be limited and could not cover the whole ground, and when it was seen to be necessary to take the same communal means of segregation after sterilization as before, it seemed that the case for sterilization was as yet by no means proved.

These were some of the impressions which the day's discussions had left upon his mind. He thought it had been well worth while to hold a Medical Sociology Section again this year as part of the Annual Meeting, and that the choice of the subject had justified itself. A good deal of missionary work was required to make the public understand the reality and the importance of this question. A good deal of work was needed also to make the medical profession appreciate the same thing. He was not one of those who believed it necessary that the medical student when he graduated should have been taught all about these matters. Given the right kind of medical education, especially following upon the right kind of preliminary education, the graduate would have sufficient knowledge and quickness through a post-graduate course and through the experience of life to adapt himself to what was required of him in some special branch. But many who were in middle age felt that they did not yet understand human nature, and the young man or young woman in the early twenties could not be expected to have achieved much in that direction.

He desired to close the proceedings of the Section by calling attention to a very wise remark uttered by Dr. Macfie Campbell earlier in the day. Dr. Campbell had said that they must not be alarmed by the numbers of these people in their midst. It sounded a dreadful thing that one in some 250 of the population should be a mentally deficient person. It was an appalling thing in bulk, but if it were put the other way round he was sure it would appeal to a people like the English. Here were 250 normal persons charged collectively with the care of just one unfortunate individual. Were they not prepared to take it up? It would do good to the community which gave as well as to the individual who received. He was quite sure that the English people would give it an adequate and sympathetic response.

An adjournment was made during the meeting of the Section to see a film illustrating the education of mentally defective children, shown by Miss Evelyn Fox, of the Central Association for Mental Welfare.

The Sections.

BRIEF SUMMARY OF PROCEEDINGS.

(*Continued from page 184.*)

SECTION OF MEDICINE.

Thursday, July 26th.

ON July 26th the Section discussed "Heart disease in early life—etiology, prevention, and treatment," with Dr. J. Odery Symes in the chair. Dr. Reginald Miller (London) said the subject resolved itself largely into the consideration of acute rheumatism. The chief change in the last fifty years appeared to be a reduction in the frequency of the severer manifestations. This progress was due to clinical work rather than to public health administration, earlier diagnosis and more efficient treatment being in the main responsible. But rheumatism still remained one of the serious affections of this country. Dr. Miller considered the factors hindering progress under three heads: (1) The problem of rheumatic infection—the most important; (2) the problem of heart disease in rheumatic subjects; (3) the problem of cardiac crippling in rheumatic heart disease. He enumerated the most urgent questions awaiting solution: (1) What is the underlying connexion between rheumatism and poverty? (2) What is the origin of repeated relapse, and how can it be prevented? (3) How can we give long courses of treatment to our many heart cripples? Dr. G. A. Allan (Glasgow) emphasized the magnitude of the problem. Forty to fifty thousand school children in England and Wales had organic heart disease, and the percentage doubled during the compulsory school age. He discussed the relationship of tonsillitis to rheumatic infection. Was the tonsil the site of entry, or the home of the organism? Did scarlet fever ever produce heart disease, or did it predispose to rheumatic infection? Chorea demanded a special inquiry. He laid stress upon the education of students in the points of differentiation between rheumatism in the adult and in the child; treating rheumatism by pharmacological doses of salicylate was playing with it. If the results of work in different parts of the country could be correlated and sifted much useful information might be obtained. Dr. Allan proposed the following motion, which was seconded by Dr. Reginald Miller and carried unanimously at the conclusion of the meeting:

> That the Council of the Association be recommended to appoint a special committee to consider the best steps to be taken to combat the grave menace to the community arising from chronic cardiac disease.

Dr. J. G. Emanuel (Birmingham) said that active infection of the heart demanded rest in bed; if no active infection was present a damaged heart required exercise. Physical signs, with the exception of pericardial friction, yielded evidence of past infection, but did not help in the recognition of active disease. Recent infection was shown by pyrexia, anaemia, and loss of weight. Salicylate had not diminished the incidence of rheumatic carditis; it was not a specific. There was a danger in its administration in that by relieving pain and pyrexia the child might be allowed up too soon. Hospitals, auxiliary to existing general hospitals, were badly required where children might lie until

all infection was over and where the heart already damaged might be trained to effort. Dr. Carey Coombs (Bristol) differed from Dr. Emanuel as to the efficacy of salicylate in reducing the severity of cardiac rheumatism. The programme before any committee that would be set up might be divided into prevention, propaganda, and treatment; of these prevention should come first. An examination of the conditions predisposing to infection should take a foremost place. Dr. W. Attlee (Eton) said that in public schools practically no acute rheumatism or chorea was seen, and so hearts crippled by rheumatism were very rare. But there were large numbers of functional hearts in which abnormal signs were found accidentally or in the course of routine examination, but which give no symptoms. Departure from the normal physical signs in the heart of a rapidly growing boy meant very little in the absence of symptoms. It was very doubtful if restriction of games in these cases was of any value, and it certainly did harm to the patient generally. Dr. Raven (Broadstairs) said that fresh air was very necessary for the rheumatic case, but the ordinary convalescent home was too noisy. In a rest home the question arose how long the child was to be kept to prevent recrudescence. Every child should stay six to eight months. He deprecated any routine rest; rest was necessary because of infection in the heart muscle. Dr. Layton (Walsall) said that when patients were ordered by an out-patient physician at a hospital to go home to bed for a month, the general practitioner should be written to and asked to supervise the administration of salicylate.

Dr. C. O. Hawthorne (London) emphasized the importance of prophylactic efforts, but did not approve of leaving propaganda to a special committee; it should be done through general practitioners. He submitted that the adult heart escaped rheumatic infection because the arthritic pain in the adult enforced rest, and for purposes of prevention rest must be secured. This could not be done in the case of a child until the parents were aware of the danger which slight illness might entail. Dr. A. P. Thomson reviewed his experience in dealing with the problem at the Barberville Institution in Birmingham. The outstanding clinical difficulties were to determine when the infection giving rise to carditis had become quiescent, and to discover when a child had become free from the danger of reinfection. He described the methods he adopted to obtain an answer to these questions, but added that simple reliable tests had not yet been evolved. Dr. Moffett (Birmingham) as a school medical inspector said the type of case had very much altered in recent years. There was urgent need for more hospital beds. Sir Thomas Horder agreed with Dr. Raven about the significance of a diastolic bruit as a premonitory sign of mitral stenosis. Mitral stenosis differed in its evolution from mitral regurgitation; most cases of the latter resulted from acute rheumatic endocarditis, whereas most cases of mitral stenosis resulted from chronic inflammatory process, often afebrile—not a vegetative affair of the cusps, but a slow infiltration of the valve.

Dr. Langley (Manchester) remarked on the similarity between the course of tuberculosis and rheumatism. Both improved on graduated exercises, but the response of effort to the streptococcus of rheumatism and to the bacillus of tuberculosis was not the same; one was easy of recognition and the other not. Dr. Routh (Southsea) commented on the great difficulty of tracing the origin of valvular defects in adults who had not known they had organic heart disease. The recuperative power of the child's heart was extraordinary. In private practice acute rheumatism was very rare, and the subacute and chronic cases were very difficult to deal with. Dr. Whittington (Hove) stressed Dr. Attlee's opinion that properly regulated exercises were much better than depriving schoolboys of games. Dr. Miller, in reply, thought the meeting was in general agreement as to the necessity of rest in the treatment of cardiac disease, but that too prolonged bed might be a drawback. He was glad they felt that the time had come for investigation.

Friday, July 27th.

At the final session the Section discussed the subject of chronic bronchitis, with Dr. G. A. Allan (Glasgow) in the chair. Dr. J. J. Perkins said that chronic bronchitis was usually secondary to some chronic pre-existing disease, especially of the upper respiratory tract, the treatment of which was the essential factor for success. The health and activity of the lungs must be maintained by fresh air, exercise, and special respiratory exercises. Dr. J. O. Symes (Bristol) discussed the bacteriology and vaccine treatment. He took a very optimistic view and maintained that improvement was usual, cure frequent, and the patients were never made worse. Chronic bronchitis being due to a mixed infection, autogenous vaccine was desirable. The exciting organisms were constantly present in the nose, and details for the collection of material for bacteriological examination were given. The dose of vaccine must be sufficient to excite a reaction and treatment must be continued for at least three months. Dr. M. G. Foster (Harrogate) maintained that in early cases climatic treatment enabled habits of coddling to be set aside. Dry air, lessened secretion, and diminished air pressure of the Alps might be of great value in the winter, but at high altitudes insomnia was often aggravated; the chest wall must not be rigid. Spa treatment was of value in early cases. When bronchitis was firmly established the aim was to diminish secretion. With hard cough and scanty expectoration, a moister atmosphere was advisable; asthma cases should be above sea level. Mr. G. Seccombe Hett said that all cases which he as a throat surgeon saw were descending infections from the upper respiratory tract—in children a poor airway and infected tonsils were common predisposing causes of bronchitis. A deflected septum induced nasal catarrh, and served to infect and reinfect the bronchi. Tonsillar infection in adults was less likely to produce bronchitis than was a nasal infection; infected teeth should always be removed. Removal of polypi might relieve chronic bronchitis and asthma by permitting drainage of infected ethmoidal cells. Dr. A. C. Inman had been disappointed with results of vaccine treatment. It was of the utmost importance to overhaul the patient thoroughly. Tubercle and syphilis should always be borne in mind in investigating the cause of chronic bronchitis. Cases from the bacteriological point of view might be divided into two classes: (1) Streptococcal, in which the results of vaccine treatment were intensely disappointing; and (2) Friedländer bacillus, the one type curable by vaccine. Prophylactic inoculation should be carried out during periods free from catarrh. Dr. Edgar Collis (Cardiff), in a written communication read in his absence, said that chronic bronchitis caused more deaths than any other disease, especially in later life. Predisposing causes were wintry weather and atmospheric pollution; a chronic traumatic origin was commoner than an infective process and prevention should be attempted by clearing the atmosphere. Dr. Florence Stoney (Bournemouth) spoke of dental sepsis as a very common cause of bronchitis; it might give rise to no local signs and only be detected by an *x*-ray photograph.

Dr. Aston Key (Portsmouth) said that one of the great troubles was that the bronchial mucous membrane was incapable of complete repair; he asked for more light on this subject. He agreed that many cases arose from obstruction to the nose, and these always succumbed to bronchitis whether the nose was operated on or not. Dr. G. B. Batten (Dulwich), from thirty-seven years' experience as a general practitioner, said that the gradual weaning of chronic bronchitics from stuffy rooms and overclothing to habits of fresh air and rational clothing had practically eliminated cases of habitual chronic bronchitis, and this line of treatment was of more importance than vaccines or surgical procedure in the upper air passages. Dr. Hyla Greves (Bournemouth) drew attention to the fact that chronic bronchitis was a secondary affection and that often underlying it was a constitutional disease—namely, gout, alcoholism, arterio-sclerosis, heart disease, or peribronchial tuberculosis. In treatment it was of the utmost importance to cultivate gradually the resistance to cold. Sir Thomas Horder also emphasized the importance of associated constitutional conditions. Should all cases of bronchial catarrh be grouped as chronic bronchitis? All cases were not infective; in some the infective agent was dominant, in others it played but a minor part, and this explained the success of vaccine in one class and its failure in the other. Intermediate between

the paroxysmal types—asthma—and the true infective type was the mucous diathesis in which vaccine also was disappointing; this group, including mucous colitis, was very difficult to treat: the cardio-vascular, nervous, and digestive systems must also receive attention. Old bronchitics might be killed by too robust attempts to upset their habits. Dr. Donald Hall (Brighton) said he had found autogenous vaccine of value. Dr. Perkins, in reply, said the discussion appeared to have emphasized the fact that chronic bronchitis was secondary, the importance of educating people to an open-air life, the necessity for removing underlying conditions, and for treating the patient as well as his lungs.

SECTION OF SURGERY.

Thursday, July 26th.

WHEN Sir Henry Gray, President of the Section, took the chair at the second session he found a large audience gathered to hear the discussion on the treatment of acute primary infections of the hand. It was obvious as the discussion proceeded that it provided a very considerable amount of interest, although apparently a subject of minor importance. Mr. Wilkie (Edinburgh), who introduced the discussion, pointed out the importance of the subject from both a pathological and an economic point of view. The anatomical considerations were, first, that the lymphatic network was so very full and free; secondly, that the cellular tissue, especially in the pulp of the digits, was divided into spaces by dense fibrous septa, and that infection of the tissue led to great tension, often with necrosis. In addition, in the palm of the hand there existed two large cellular spaces. Further, the arrangement of the tendon sheaths in relation to these spaces demanded accurate anatomical knowledge. The two main types of infection were the lymphatic and the suppurative. The lymphatic were those as a rule from a minor, almost insignificant, prick or scratch, and rapidly fulminating generalized streptococcal infection took place. It was an incorrect thing to incise such a finger, as a free opening invariably led to a more rapid spread in the opened-up tissues. In regard to the treatment of suppurative cellulitis freedom of incision, rest in the initial stages, dressings of the nature of hot antiseptic wet dressings, and at a later stage a certain amount of freedom of movement, followed closely Nature's methods. He advocated strongly the use of Bier's elastic bandage in the acute lymphatic infections, along with a large dose of polyvalent antistreptococcic serum. In operating on these cases it was essential to apply a tourniquet and administer a general anaesthetic. Early accurate diagnosis was the crux of the management of hand infection; for lymph infection without suppuration the treatment should be on essentially conservative lines; for suppurative infection in tissue spaces or tendon sheaths prompt and free drainage with early systematic functional exercises should be the guiding principles. The discussion was continued by Mr. Max Page (London), Mr. Saner (London), Mr. J. E. H. Roberts (London), Mr. Mullally (London), Mr. Handfield Jones (London), Mr. Burrows (Portsmouth), Mr. Mamourian (Ashton-under-Lyne), Mr. Cuthbert (Gloucester), Mr. Begg (New Zealand), and the President. Some variety of opinion in regard to situation of incisions and the application of moist or dry dressings was expressed. All the speakers agreed with the introducer of the subject in the essentially conservative treatment of the streptococcic infection, and on the necessity for operating in a bloodless field under a general anaesthetic in the suppurative types of infection.

Mr. A. A. McConnell (Dublin) read a short paper on the diagnosis of brain tumours with the assistance of *x*-ray photographs, taken after the ventricles of the brain had been aspirated and filled with air. He had to admit that ventriculography was a difficult operation and was attended with danger; but it had its uses in demonstrating varieties of hydrocephalus and the situation of pressure with obliteration of the anterior or posterior horns of the ventricles of the brain. Mr. Geoffrey Jefferson (Manchester) gave an account of six cases with only one death; it was his opinion that the method was only applicable where the diagnosis of tumour was certain, but its localization uncertain. Mr. Percy Sargent (London) said that his experience of this method was that the difficulty lay in the interpretation of the radiograms. He went on to describe a method of localizing pressure on the spinal cord by tumours by the injection into the spinal theca of an oily substance called "lipiodol," which was impervious to the *x* rays. This method was of value in delimiting the lower part of a tumour, an important point from the operative aspect, because the neurologist could only define the upper limit of the tumour.

The surgeons of the Royal Hospital, Portsmouth, followed the lead given them by surgeons in the other cities in which the Association had met by operating in the mornings before the meeting of Sections, and also by giving demonstrations of cases in the afternoons. On Wednesday Mr. Munro Forde performed the operations of the day before an appreciative and numerous audience, and Mr. Childe demonstrated a series of cases on the same afternoon. Mr. Burrows demonstrated cases on the afternoon of Thursday, and Mr. Childe performed operations on the morning of Friday. At all of these supplementary meetings there were good attendances of keenly interested members.

Friday, July 27th.

"Anaesthetics from the surgeon's point of view," at the third session of the Surgical Section, while discursive, led to diversity of opinion in materials and methods and to uniformity of opinion in regard to the relationship of the surgeon and the anaesthetist and the welfare of the patient. Mr. Wilfred Trotter, who introduced the subject, showed how the sympathetic understanding of one another's work was indispensable between surgeon and anaesthetist if the full advantages of modern surgery were to be available to the patient. A surgical operation demanded for its complete success something more than the mere exercise of special aptitude and knowledge. The successful management of anaesthesia needed so full a knowledge of the actual surgical conditions that there might well be in the future a closer and closer approximation of the training of the anaesthetist to that of the surgeon and a more and more complete assimilation of the anaesthetist into the surgical team. Many of the most valuable methods of inducing anaesthesia were definite surgical operations in themselves, and seemed to ensure the inclusion of the anaesthetist in a share of the operation. In certain operations, such as those of the mouth, nose, pharynx, the relation of anaesthetist and surgeon had tended to be rather confused and difficult to regulate. It was in these specially that the anaesthetist would be likeliest to be found joining the surgical group of participants. Mr. Trotter discussed the various methods of inducing anaesthesia known and practised by himself. He regarded ether as the nearest approach to an anaesthetic of general use; chloroform as a drug which had its own proper field and for some uses of which no effective substitute had been found.

Sir W. de C. Wheeler (Dublin) thought that various factors operated in promoting a perfect anaesthesia, and both surgeon and anaesthetist should exercise wise judgement in considering the nature of the operation, the type and temperament of the patient; even the temperament and habits of the surgeon must be considered. He dwelt on two practical points—one in relation to cases of sudden collapse, where ordinary means of artificial respiration failed, but where he thought (in at least 12 cases) he had saved the patient by inflating the lungs by blowing through the facepiece of an ether apparatus closely applied to the mouth. This was a plan of ancient usage and he commended it in certain desperate cases. He thought that the so-called ether pneumonia was not due to the ether itself, but to the imperfect descent of the diaphragm. He advocated also local anaesthetics in conjunction with general anaesthetics. Dr. A. E. Boyd (Dublin) favoured colonic ether anaesthesia; he had practised with great success the injection into the rectum of a certain quantity (1 oz. to every 20 lb. of the patient's weight) of a solution of olive oil and ether, in equal parts, sometimes with the addition of a drachm or two of paraldehyde.

Mrs. Dickinson Berry strongly advocated in goitre cases the combination of anaesthetics with light general anaesthesia by ether. Mr. Basil Hall (Bradford) had had the good fortune of doing practically all his work with one anaesthetist, upon whom he depended and to whom he attributed in great measure his success. He deprecated the multiplication of apparatus by anaesthetists. He regarded ether as the most satisfactory anaesthetic for general use, preceded by hypodermic injection of heroin or morphine, or by a few whiffs of chloroform for induction. Sir Crisp English spoke in favour of ethanesal and of the employment of ethyl chloride for induction. The discussion was also taken part in by Dr. A. L. Flemming (Bristol), Mr. A. A. McConnell (Dublin), Mr. Cuthbert (Gloucester), and Mr. Pannett (London), and the results of the debate were summed up by Mr. Trotter. Mr. A. Clifford Morson (London) concluded the work of the Section by reading a paper on the division of the vas deferens in prostatectomy. Sir Henry M. W. Gray conveyed the thanks of the Section to the secretaries, Messrs. B. C. Maybury and Harold Burrows, for the success of its meetings. Thanks to the President were accorded on the motion of Mr. Burgess, who expressed the hope that Sir Henry Gray would achieve success and happiness in his work in Canada.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

Thursday, July 26th.

THE morning session was devoted to a discussion on the use and abuse of forceps. There was a very crowded attendance. In calling upon Mr. Comyns Berkeley, the President asked everyone present who had any experience of forceps to state his views. In the opening paper Mr. Comyns Berkeley expressed the opinion that the unsatisfactory position of the forceps operation to-day was due to inefficient teaching. The blame rested more upon the shoulders of the teachers than on the family doctor. But while the teachers must bear their full share, they were not entirely at fault, as the proper teaching of midwifery even now was not insisted upon by most of the examining bodies, while adequate facilities for the proper teaching of the subject had not yet been provided. The number of cases was insufficient and there were not enough obstetric beds in either the general or the lying-in hospitals. Yet the importance of proper teaching could not be exaggerated, for without it a man would often experience difficulty in determining whether a particular case was normal or otherwise. The true conduct of labour commenced with ante-natal treatment. There were occasions when the forceps had to be used, but the less frequently they were employed the better. The only way to bring about such a reduction was by efficient ante-natal supervision. The opportunities students had for acquiring knowledge of ante-natal conditions were still very limited, yet this knowledge would easily prevent the abuse of forceps. The forceps operation must be regarded as a surgical operation, yet how rarely was it carried out in the surroundings and with the technique which should accompany a surgical operation. In the case of the ordinary surgical operation the practitioner was able to call in skilled assistance, and whatever was done was done deliberately and with proper preparation. In the case of obstetric emergencies the doctor was expected by the patient to be able to carry out all necessary measures himself without assistance and without delay. This position was quite untenable. It was impossible to pass anything—fingers or forceps—into the uterus without the potential risk of infecting it. It was not unfair to say that many men took infinitely more trouble over the smallest so-called surgical operation than they did over the forceps operation. In the absence of sufficient hospital accommodation for lying-in women, the local authorities should be responsible for providing the proper aids to childbirth. His experience as an examiner to most of the examining bodies in England had taught him that less attention was paid by students to the mechanism of labour than to any other subject in midwifery. The operation of forceps extraction must always interfere with the normal mechanism, and in many cases it did so disastrously. That the forceps were often used unskilfully was due to the fact that a large number of men had never seen them used before going into practice. In his opinion the only warrantable use of the forceps was for traction. To use them as a lever, as a compressor, as a rotator, or as a stimulator was absolutely wrong. In using as a traction instrument the force employed should be strictly limited. It was an abuse of forceps to use them too early or too late. Those who sought to justify the frequent use of forceps were apt to lay stress on three essentials—perfect application, slow extraction, the use of only the smallest amount of force. Very wise, but in how many cases were these essentials maintained? Severe injury to mother and child was far too frequent with forceps. The forceps when indicated was a safe instrument if properly used; when not indicated it was difficult to mention a more dangerous one. Mr. Berkeley proceeded to outline the indications for the use of forceps, with the reservation that, taking into consideration every case in which instrumental assistance appeared desirable, there would still be more danger in using forceps than in dispensing with their aid. He urged strongly that in the absence of serious complications delay in the first and second stages was less harmful than rapid delivery by forceps. He regarded the high forceps operation as an extremely dangerous and often most difficult operation, which should be avoided and should never be an operation of choice. In many cases of delay due to disproportion between the head and the pelvis, labour terminated spontaneously and safely after a second stage of six or even more hours, though it would have ended disastrously had forceps been used. If there were the least doubt as to the head being able to pass the brim forceps should not be used, as this only increased the danger if Caesarean section were decided upon. Dr. Fairbairn, who followed, emphasized the importance of properly directed ante-natal supervision as the surest means of preventing the haphazard use of forceps. A very lively discussion followed, in which Dr. Hendry (Glasgow), Dr. Forde (Portsmouth), Mr. Rivett (London), Dr. McAskie, Colonel Buchanan, I.M.S., Dr. Campbell (Belfast), Professor Johnstone (Belfast), Dr. Douglas (Cupar), Dr. Evans (Beckington), Dr. Grove, Dr. Buchan (Catford), Dr. Lewis (Southport), Sir Gerald Giffard, I.M.S., and the President took part. Mr. Comyns Berkeley dealt trenchantly with his critics in his reply. The large attendance at the meeting of the Section made the proceedings exceedingly interesting. In the afternoon a demonstration of models explaining the mechanism of labour was given by Lieut.-Colonel Andrew Buchanan, I.M.S.

Friday, July 27th.

The proceedings opened with a paper by Mr. Beckwith Whitehouse and Dr. Henry Featherstone upon certain observations on the innervation of the uterus. Their interest in the problem had been stimulated by the observation of the extraordinary power of contraction possessed by the uterus in cases of Caesarean section performed under lumbar spinal anaesthesia with tropacocaine. They had made observations upon the uterus at all stages of pregnancy under spinal anaesthesia, but they did not desire their deductions yet to be considered in any way final; they might require modification as the work proceeded. The nervous mechanism controlling the uterus was constituted by three systems—local, sympathetic, lumbo-sacral autonomic. The "local" mechanism was capable of producing rhythmical uterine contractions and was independent of the sympathetic and autonomic systems as in the case of other involuntary muscle. The sympathetic stimuli were motor to the circular muscle fibres and inhibitory to the longitudinal bundles. The lumbar cord stimuli were motor to the longitudinal fibres and inhibitory to the circular fibres. In regard to the practical application of these results, the advantages of lumbar anaesthesia, either alone or combined with general anaesthesia, in classical Caesarean section were very evident in securing a firm contraction of the uterus and reduction of haemorrhage to a negligible amount. In cases where the uterus was exhausted, spinal anaesthesia should certainly diminish the tendency to *post-partum* haemorrhage. For the same reason, spinal anaesthesia was to be preferred when it was necessary to evacuate the uterus by the vaginal route in the earlier

months of pregnancy. A note of warning was necessary in connexion with the employment of spinal anaesthesia in cases of normal labour: the expulsive power of the uterus was diminished and forceps delivery would probably be required. The paper was discussed by the President. Dr. Sidney Forsdike then read a communication on the treatment of uncontrollable uterine haemorrhage by radium. He had treated forty-five cases who had all undergone various previous operations for severe haemorrhage. He emphasized the fact that all his cases had been treated by radium *in utero* after preliminary curettage. The sole contraindication to the employment of radium was the presence of chronic pelvic peritonitis. One exposure was generally sufficient. Radium produced a menopause, but without any of the ordinary symptoms attending that condition. Radium produced its results purely by its action on the endometrium. Slides were shown to illustrate the changes produced—namely, atrophy of the glands of the endometrium and great increase of fibrous tissue. On the other hand, the ovarian tissue showed no signs of irradiation unless the ovary was in actual proximity to the radium. The paper was discussed by the President, Mr. Whitehouse, Dr. Grove, Dr. John Campbell, Dr. Hendry, and Dr. Russell Green. Dr. Louisa Martindale next contributed a paper on the treatment of fibroids by Erlangen methods. The paper was discussed by the President, Dr. Forsdike, and Mr. Beckwith Whitehouse. None of these speakers could find anything favourable to say concerning this method of treatment. Mr. Lane Roberts followed with a paper on syphilis in its relation to obstetrics. The proceedings of the Section were concluded by Dr. W. R. MacKenzie, who read a paper on roentgenographic pelvimetry. He said that the short exposure necessary was not sufficient to produce any ill effect either on mother or child. The paper was briefly discussed by the President, Dr. Louisa Martindale, Dr. Hendry, Mr. Lane Roberts, and Dr. John Campbell.

SECTION OF PATHOLOGY.

Friday, July 27th.

IN a historical review of the origin of the science of medical mycology Dr. Castellani drew attention to the fact that medical mycology came into existence long before bacteriology, but in recent times the study of bacteria has absorbed the attention of medical pathology. But more than 25 per cent. of tropical diseases were due to fungi and the part they played in morbid processes in this country was becoming more and more widely recognized. Fungi might be defined as filamentous organisms not possessing chlorophyll and reproducing either asexually by division and spore formation or sexually after conjugation by oöspores. They consisted of a vegetative part devoted to the acquisition of food and a reproductive part. Dr. Castellani defined the different types of reproductive organs—namely, gonidia or endospores, conidia or exospores, thallospores, hemispores, zygospores, and oöspores. The difficulties encountered in the accurate scientific classification of fungi were enormous, and could not well be overcome without an extensive knowledge of botany. Classification was founded chiefly on the shape, colour, and character of the spores. Dr. Castellani then considered the biological and biochemical characteristics of fungi and showed that they behave similarly to bacteria in producing specific agglutinins and toxins, but unfortunately in many cases a large amount of non-specific agglutinin for other species was also present. He described a mycological method for the identification of various sugar and other carbon compounds. Turning to the higher fungi as agents in the causation of disease he declared that statements in textbooks that thrush was due to *Oidium albicans* were misleading, for the disease clinically recognized as thrush might be caused by many different types of fungi; most of these belonged to the genus monilia, but ascomycetes and saccharomycetes and other fungi might be responsible for this infection. He showed six fungi collected from cases of thrush and pointed out that clinically there were many different varieties of this disease. Until a few years ago ringworm was considered to be caused by only one type of fungus, but it was now known that there were different types of ringworm caused by different organisms. The two principal types of thrush to be distinguished clinically were the white or grey-white type, extremely common, and the yellow-brownish type of rarer occurrence. In the tropics bronchial affections due to the higher fungi were quite common, but they might also be met with in temperate climates. The severity of these diseases depended a great deal on the variety of fungus present, the prognosis being most unfavourable in nocardial infections, more hopeful if of monilic or oidium origin, and comparatively good if caused by a sporotrichum, a hemispore, or fungi which were rapidly influenced by potassium iodide. The severe chronic forms of broncho-mycosis had all the customary appearances of advanced tuberculosis, for which they might be easily mistaken. Broncho-moniliasis might be a primary disease or a secondary infection grafted on to tuberculous disease. In true broncho-moniliasis when the patient got better the fungus disappeared, the administration of potassium iodide caused great relief, and the monilia isolated were pathogenic for rabbits. He classified the urethritis of hypomycetic origin into three types: (1) with a white or yellowish discharge due to saccharomyces, monilia or oidium; (2) with a brownish or black discharge due to aspergillus or penicillium; (3) with a red or pink discharge due to pigment-producing fungi or yeasts and bacteria in symbiosis. Dr. Castellani completed his lecture by showing a large number of slides illustrating different types of dermatomycosis. Dr. Carvadias, Professor Haswell Wilson, Dr. Dukes, Dr. MacKeddie, and Dr. Mackenzie Wallis took part in the subsequent discussion.

Owing to the pressure of other matter it is necessary to postpone publication of the full report of the discussion on diseases of the stomach.

SECTION OF NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

Thursday, July 26th.

THE second day's proceedings opened with a discussion on the sequelae of epidemic encephalitis, with Dr. Hinds Howell (London), Vice-President, in the chair. An excellent discussion followed the opening paper, read by Dr. Farquhar Buzzard (London). He said that an experience of five years had enabled us to be more or less familiar with the ravages of the disease, but it was still not easy to separate clearly between the active phases of the disease and its sequelae. Such sequelae could be broadly divided into disorders of function appearing after the disease was spent and those which appeared to follow progressively upon the acute phase. He mentioned the following sequelae, discussing each in turn: (1) Mental after-effects; (2) involuntary movements; (3) the Parkinsonian syndrome; (4) disturbances of respiration; (5) hiccup and vomiting; (6) optic neuritis; (7) lethargy. The pathogenesis of the sequelae was an interesting question, but all could not be due to recurrent attacks of inflammation. Remarkable hyaline and calcareous changes had been found in the vessels, which might account for some of these sequelae. Such changes in the blood vessels were often found in the basal ganglia. In some cases of focal epilepsy localized meningeal changes had been found and treated surgically. No specific treatment was yet known. It was important to insist on a really adequate period of rest and convalescence.

Dr. G. Riddoch (London) related the case of a relapse occurring at the end of five years, and went on to give an analysis of the sequelae found in a series of cases at the London Hospital over a period of three and a half years; 83 cases had been traced and followed up; in most some defect remained. Mental defects were found in about seven-tenths of the cases, but the severer forms of defect were uncommon. Marked behaviour changes and intense outbursts of temper occurred, especially in children. On the physical side permanent cranial nerve palsies were common, chiefly affecting the ocular muscles. Tachycardia

had been noted in three cases, in one with goitre. The Parkinsonian syndrome was relatively common, and often progressive. Adiposity was also a common sequel, and pain in the limbs not uncommon. Dr. Hinds Howell (London) discussed the results which had followed in 34 cases under his own observation. Of these 6 died and 11 recovered completely. Nine had residual symptoms. Three cases of the Parkinsonian syndrome had made good recoveries, but others were progressive. The commonest symptoms were alterations in personality, especially a loss of emotional response. Such mental changes showed little tendency to improve. Of ocular defects the commonest sequel was a loss of power of convergence and accommodation. He went on to discuss the disorders of sleep, the curious disorders of respiration, and certain interesting relapsing cases. Dr. Feiling (London) confined his remarks to the ocular palsies as a sequel to the Parkinsonian syndrome. He quoted a case showing the strong resemblance of cases with residual ocular palsies to myasthenia gravis, and went on to contrast the features of the post-encephalitic Parkinsonian syndrome with the ordinary form of paralysis agitans. He concluded by emphasizing the serious prognosis in these cases, many of which were steadily progressive. Dr. McAlpine (London), in discussing the pathology, mentioned that he had found reports of 14 cases of Parkinsonism following epidemic encephalitis in which careful histological examinations had been made. In all of these changes in the substantia nigra in the mid-brain had been found. He discussed the calcification of the blood vessels, which he had found in the form of globules, chiefly in the anterior parts of the globus pallidus. His remarks were illustrated by a series of excellent lantern slides.

Dr. Symonds (London) remarked that in dealing with the sequelae the diagnosis must often be made in retrospect. The importance of ambulatory cases was discussed and two interesting cases quoted. The possible latent interval between the acute phase and the occurrence of any sequelae was a very important practical point, and it might extend to three years. He had been especially interested in the sensory disturbances of the disease, especially those of visceral sensibility, and thought that they might perhaps account for some of the curious attacks of respiratory and other disorders which occurred. Dr. McBride (London) raised the question as to whether most of the so-called sequelae were not really a persistence of the disease. Dr. Devine (Portsmouth), President of the Section, thought that perhaps some cases had been overlooked by psychiatrists, especially the ambulatory ones. The correlation between mental disorders and physical changes found in this disease might be called an epoch-making discovery.

Dr. Macfie Campbell (Boston) also mentioned the real practical importance of the latent interval, and discussed whether some of the sequelae were really recrudescences or mere residuum. He agreed that many ambulatory cases could be overlooked. There was a wide field for investigations into the psychology of these cases, especially in the different reactions shown by adults and children. Drs. Morris, Potts, Charnock Smith, and Hardcastle aslo spoke, and Dr. Buzzard briefly replied.

In the afternoon Dr. Da Fano gave an admirable demonstration of the microscopic changes occurring in epidemic encephalitis and in the herpetic encephalitis of experimental rabbits. A series of beautiful preparations were exhibited, and studied with the greatest interest by those present. Dr. McAlpine also showed specimens illustrating the changes in the basal ganglia and the calcification of blood vessels in human epidemic encephalitis. A most successful day's proceedings were concluded by a demonstration by Mr. Inman at the Eye and Ear Hospital of cases of squint and left-handedness in nervous children.

Friday, July 27th.

The proceedings at the closing session took the form of a discussion on the prognosis of psychoses occurring during adolescence. The chair was taken by Dr. Riddoch, Vice-President. A very good discussion was held, introduced by a paper full of interest and practical value, which was much appreciated. Dr. D. K. Henderson (Glasgow), after touching on the magnitude of the subject, went on to say how important it was that all connected with the training of the young—parents, teachers, and doctors alike—should realize what a critical period that of adolescence was. Early changes in behaviour and character should be carefully noted, as they might indicate the beginning of a serious mental breakdown. Cases could be classified on the basis of organic visceral disease or on the broader biological conceptions of adaptation and adjustment. Kraepelin's well known differentiation by symptoms with the two large groups of manic-depressive psychosis and dementia praecox had been useful, but he thought such a basis was unsafe, and one which tended to retard treatment and induce an unnecessarily pessimistic outlook. Attempts to regard and treat such cases from the organic visceral or toxic side had, it was true, met with a certain measure of success, but many cases were quite untouched by such methods. He believed that a wider conception was necessary, and the symptoms of the illness must be brought into line with the whole personality of the patient. In every case, therefore, the question would be asked, How has this patient failed to adapt himself, and what shape have his or her reactions taken? Details of cases were then given, illustrating forcibly and graphically the author's meaning.

Sir Frederick Mott said that though his own attention had been mainly fixed on the pathological side, he was much interested in the psychogenic factors, especially in their relation to the endocrine systems. He emphasized strongly the factor of genetic inadequacy as a predisposing factor of insanity. Each case was a biological problem of its own, and too much classification was a mistake. He discussed briefly his own work on the changes in the reproductive organs in dementia praecox, especially in regard to nuclear degenerations. Dr. Stokes (Portsmouth) discussed the question of the recovery rate in the dementia praecox type of case, and recalled the fact that Clouston had 15 per cent. of recoveries in five and a half years' work. The figures he gave showed a higher recovery rate among the manic-depressive type than in the dementia praecox type.

Dr. Devine, President of the Section, said that the most important thing was the study of the reaction type of the soil in which the psychosis appeared. If it was a "shut in" type a deteriorating psychosis was probably present. The greater the exogenous stresses present in any case the greater were the chances of recovery. This dictum was well exemplified during the war. He quoted two very interesting cases, and concluded by pointing out the value of finding the right environment for the patient. Dr. Symonds (London) said that behaviour reactions were the most important study. Cases failed to come under care in the early stages, a fact which was probably due to the inadequate opportunities of training afforded to the medical student. He was strongly in favour of establishing in every large general hospital a mental ward which could be used for observation and treatment. Economic factors unfortunately interfered, and prevented endeavours to place cases in really suitable environments. Dr. Jackson (Portsmouth) asked for more guidance in treatment, especially as regards occupational training, in which he was a great believer. Dr. Stone (Northampton) spoke of the question from the point of view of the general practitioner. Dr. Baird thought it impracticable to have mental patients in a general hospital. Many cases labelled dementia praecox were in reality examples of an exhaustion psychosis. Dr. Matthew referred to the occupational treatment he had seen practised at Zürich. Dr. Riddoch agreed with Dr. Symonds as to the value of opening a ward for mental cases in a general hospital. He also emphasized the importance of a study of the reaction types of the individuals. Dr. Henderson replied, and further interested the meeting by an account of the occupational treatment and training as practised in his own institution.

SECTION OF OPHTHALMOLOGY.

Friday, July 27th.

THE President, Sir John Parsons, said the subject, "Ophthalmology in its relation to the Navy, Army, or Air Force," was in many of its aspects new, in none was it unimportant. Air Commodore David Munro, in his opening paper, said that "eye" determined success in games as in

flying. The judgement of the approach of a cricket ball was similar to the judgement of the flying officer in landing. They had learned to insist upon something near perfection in the whole ocular arrangements: emmetropia, good muscle balance (that is, an accurate adjustment of external and internal ocular muscles), optic tracts which faithfully reported impressions, and cortical areas which received and analysed these impressions accurately. A "master eye" went with a poorer eye capable of giving false impressions, the reception of which might cause disastrous actions. In practice a wholly one-eyed man was safer in the constancy of his limitation than the two-eyed man whose disability was variable. Glare was particularly disturbing to binocular conditions and aggravated any latent defect. Wing Commander Cecil Clements said he had found defects of muscle balance of importance in certain civilian occupations—for example, amongst engineers. At a flying station similar disabilities produced serious accidents. No less than 80 per cent. of crashes occurred during landing—that is, when judgement was most involved, eye judgement particularly—and amongst the officers who were the subjects of the accidents ocular imbalance was frequent. Landsmen did not realize the immense disturbance of ocular conditions produced by an aeroplane spin, by side-slipping, and the approach to earth in landing. The strain was great on normal eyes—much greater in abnormal eyes. He thereupon detailed the tests used in these examinations. Amongst all tests the one he found of greatest service as a standard was Bishop Harman's diaphragm test. Major-General Sir William Macpherson said that the problem of the army was different: keen visual acuity was the prime necessity; provided the nature of the work allowed their use, glasses could be made use of to improve acuity. Major J. H. Gurley said that by the rearrangement of visual standards a great reduction in wastage had been obtained. Colonel Ransom Pickard commented upon the occurrence of night-blindness in conditions of uncorrected errors of refraction and the exhaustion caused by the strain of these errors. Surgeon Commander Breton said a successful gunlayer must have first-class vision; 6/6 was not enough; 6/4 should be the normal for these high-grade ratings. Further, there should be perfect imbalance for most purposes.

Major E. B. Spaeth (U.S.A. Army) spoke upon development of plastic operations for the restoration of lost eyelids and showed a number of photographs of cases. Mr. M. W. B. Oliver commented on the plastic operations. The occurrence of night-blindness in war conditions was important; occasionally it was simulated by malingerers. Protection of the eyes was also important. Mr. Bishop Harman referred to the disclosure of muscle imbalance during periods of ill health due to abdominal trouble and thought that this was a parallel to the disturbances set up by the severe and sudden stresses of flying. Dr. W. Maddox thought near vision tests were not so good as distance tests, which more approached natural conditions. Major Carruthers said he had worked with Commander Clements for some months and was convinced of the importance of the work done by him, and the effectiveness of the ocular training devised by him. Mr. H. Caiger, Major A. E. Wright, and Mr. J. A. Valentine put questions on certain points; Air Commodore Munro and Wing Commander Clements replied. The President commented upon the high value of the research work done by Commander Clements and the influence this would have upon research in industrial fatigue. A paper on the lighting of battleships was read for Surgeon Lieutenant Commander R. J. Hanson, R.N.V.R. At the conclusion a resolution was passed urging the Government to carry on research in these ocular problems, which was carried unanimously.

SECTION OF PUBLIC HEALTH.

Friday, July 27th.

THE chair was taken by Dr. Lockhart Stephens, and a discussion on the effect on health of sewer air and drain air was opened by Professor Wynne, M.O.H. Sheffield. Dr. Wynne said he believed the recent enforced economy in public health departments had not been an unmitigated evil, as it had compelled a more careful and critical examination of the comparative value of various branches of public health work. The same care should be taken in compelling expenditure by private individuals as in dealing with the public funds at the disposal of the M.O.H. Reconstruction of drains was often expensive, and it was necessary to consider how far the generally accepted view of the danger of inhaling drain air was justified. In face of the appalling sanitary conditions with which they were confronted, sanitarians in the last century and the framers of the Public Health Act of 1875 concentrated on the abolition of "nuisances" generally, and especially on the efficient removal of excreta. In those days faulty drainage came to be looked upon as the principal cause of nearly all epidemic disease. More recent research had shown that these diseases were not generally, and probably could not be, caused in this way, and the medical profession then fell back on the theory that the inhalation of polluted air in some way reduced the resistance to these diseases, "by lowering the vitality of the tissues." He did not understand this phrase, and all the available evidence pointed in the opposite direction. Chemically sewer air under ordinary conditions had been shown to be free from deleterious gases, and bacteriologically purer than air from adjoining streets. Men working in sewers were at least as healthy as the average, and had no special liability to the diseases under consideration. Numerous experiments had proved that animals kept in an atmosphere consisting entirely of sewer air were not harmfully affected by it. He drew a distinction between sewers merely pervious to smoke under pressure and those so defective as to permit the escape of liquid sewage into the soil. Pollution of the soil adjacent to houses with liquid sewage containing putrescible organic matter and with an enormously high bacterial content might easily become a cause of disease, but experiments showed that the discharge of bacteria into the air only took place as a result of splashing, and that their presence in the air was localized and very temporary. It was therefore important to avoid waste of money in this direction and to concentrate expenditure on the remedy of conditions that were proved to be a danger to health.

Dr. Mearns Fraser (Portsmouth) agreed that the danger of sewer air might be exaggerated, but thought it might be difficult to draw the line beyond which defects became dangerous. It was certainly necessary to prevent pollution of the soil by liquid sewage. He thought it might be dangerous to assert the harmlessness of drain air in houses. Dr. Wynter Blyth said that many of these experiments in the past had been made by people who were quite hazy as to the chemico-physical conditions with which they were dealing. The whole matter was a question of frothing or bubbles, and he had been experimenting on the power of bursting bubbles to disperse bacteria. Dr. H. Scurfield hoped that further researches would be carried out by Dr. Wynter Blyth on these very interesting lines. He had always taught that sewer air did not cause diphtheria or other infectious diseases, but might predispose to them. Without water-tight and gas-tight drains it was difficult to guard against leakage or to recognize an obstruction when this occurred. Dr. Glennie emphasized the importance from a health point of view of rats gaining access to the house and possibly conveying infection to the inhabitants. Dr. Wynne replied to the various points raised.

Dr. Hazleton (Sheffield) in a short paper called attention to the frequency of leakages from gas brackets and the consequent inhalation of CO and other constituents of coal gas as a possible predisposing cause of tuberculosis. He explained by diagrams the construction of the ordinary gas-tap, and how wear tended to cause leakage. By reversing the position of the tap this could be prevented. In the discussion which followed Drs. Fraser, Scurfield, and Wynne agreed that even apart from tuberculosis the conditions to which Dr. Hazleton had called attention were likely to be a serious source of ill health, and one not generally recognized.

SECTION OF DISEASES OF CHILDREN.

Friday, July 27th.

DR. DAVID NABARRO (London) gave a review of the work of different observers on summer diarrhoea and described his own findings in 150 cases which he had investigated with Dr. Paterson in 1921. The organisms isolated in different

cases or groups of cases were extraordinarily variable, and the morphological characters of the same bacillus were observed to undergo considerable variations. It was evident that no one particular organism was the cause of summer diarrhoea; in fact he had come to the conclusion that the disease was not infective in the strict sense of the word. The primary cause was not bacteriological, but nutritional or metabolic. Resistance was lowered by such causes as improper feeding and prolonged exposure to heat, which led to secondary infection by bacteria. He hoped that in time summer diarrhoea would become a thing of the past. Welfare centres were educating mothers in the proper clothing and feeding of their children. The use of dried milk and the reduction in the number of flies in cities had eliminated important sources of infection.

The President, Dr. Cautley, could not agree that summer diarrhoea was not an infective disease. In his hospital infantile diarrhoea was nursed in the same way as typhoid, and yet cases of infection occasionally occurred in a ward; he was inclined to attribute this to flies. Some of the worst toxaemic cases began in well nourished children; in them a predisposing state of nutrition appeared to have nothing to do with it. He considered the disease infective, but many different organisms were involved. Dr. D. H. Paterson said that true "summer diarrhoea" occurred in only a small proportion of children who suffered from diarrhoea in summer. In his series of cases at Great Ormond Street there had been a history of unsatisfactory feeding in 50 per cent.; the other half were in an extraordinarily good state of nutrition—they were in fact overfed. In hot weather these children might easily get an acute intestinal upset. If treated by being taken off all food, they passed rapidly into a state of acidosis, and acute fatty degeneration of the liver would be found at necropsy. Fermentation in the intestine was one of the chief causes of diarrhoea; the proof of this was that the most successful treatment was a diet in which fermentation was reduced to a minimum. Dr. Bernard Myers (London) had been astonished to find so many cases of summer diarrhoea in which nothing pathological was found at necropsy. He thought Finkelstein's classification more helpful than any other. A diet with too much carbohydrate and fat appeared to be specially prone to produce the disease; protein was usually well tolerated. Some cases, he thought, were due to nutritional disorder, and some infective; treatment varied according to the cause. Dr. Catherine Chisholm (Manchester) confirmed the value of Finkelstein's work in treatment. There was undoubtedly an infective group of cases. The decline in the disease was due to welfare centres and to the care taken in cities to prevent sources of infection. Dr. Baumann (Johannesburg) said that in the past a mistake had been made in considering all cases as of infective rather than of nutritional origin. But it would not do to go to the other extreme. Both types were seen. Finkelstein seldom starved his cases, and never for more than six hours; he gave buttermilk, which was a food rich in water and salts. Dr. G. B. Sweet (New Zealand) had used skimmed milk powder extensively in cases of summer diarrhoea and found it entirely satisfactory. It was simple to use, which Finkelstein's protein milk was not. After the first few days he added lactose, and later fats were gradually introduced. Dr. Eric Pritchard (London) thought enough stress had not been laid on the character of the stools. Where there was proteolytic decomposition they were alkaline, in fermentative diarrhoea they were acid. Buttermilk was merely a coarse method of introducing lactic acid bacilli; he preferred lactose with lactic acid bacilli in proteolytic fermentation. High irrigation of the colon was also useful. In acid fermentation the indications were the reverse; protein administration was more scientific and successful. Indiscriminate use of protein milk or sugar solutions was unsatisfactory. Dr. Nabarro and Dr. Paterson replied.

Dr. H. T. Ashby (Manchester) read a paper on the after-results of abdominal tuberculosis in children, based on the study of 250 cases. He insisted on the difficulty of diagnosis and the care needed to exclude cases of rickets or dyspepsia which might resemble tuberculosis. He thought the human source of infection was commoner than the bovine. As to prognosis, if a case remained free of symptoms for two years the outlook was good; under one year the cases were almost invariably fatal, but the prognosis improved as the child grew older. Most recoveries were complete. In some cases a mass of calcified glands could be felt many years later in the same situation as the former enlarged glands, but these old glands seemed to cause no trouble. Dr. E. A. Cockayne (London) agreed with Dr. Ashby on the absence of after-effects; calcified nodules and glands in the omentum produced no symptoms. Dr. Eric Pritchard did not regard abdominal tuberculosis under one year of age as necessarily fatal. For early diagnosis he injected old tuberculin; if the child was infected there was a local and focal reaction; on clinical evidence alone it was very difficult to say whether tuberculosis was present or not. Treatment by tuberculin had been very successful. Dr. Sweet said that most cases of abdominal tubercle in New Zealand were bovine. He had obtained very good results from treatment by tuberculin.

Dr. Molyneux read a paper on radium for tuberculous cervical adenitis. The treatment was painless and safe provided the technique was carefully carried out, and he had obtained apparent cure whenever it was properly followed. Caseating masses of glands, suppuration, and secondary infection and old sinuses were no contraindication to the method.

SECTION OF LARYNGOLOGY AND OTOLOGY.

Friday, July 27th.

IN opening the discussion on spasm of the larynx, Sir StClair Thomson (London), after a definition of terms, briefly reviewed the anatomy and physiology of the parts concerned and began by classifying the known causes of spasm. He emphasized throughout the importance of the psychological factor in intensifying and even originating spasm, and mentioned that in his long experience he had not had occasion to perform tracheotomy, though he was far from condemning the procedure where the strain on the heart was obviously too great. He was convinced that whooping-cough in adults sometimes was the cause of spasm [an original observation, this], and quoted cases due to gout, morphine habit, and tabes. Like most of his hearers he had found difficulty on occasion in distinguishing between abductor paralysis and adductor spasm, but was able to indicate clinical methods of solving the problem. Having touched upon Semon's law, and spasm in anaesthesia, laryngismus stridulus, hiccup, and epilepsy, he concluded by summing up the lines of treatment at our disposal. The problem, as ever, depended upon diagnosis, and in each case a most exhaustive examination was necessary to ensure that we were not treating a case of paresis by sedative methods. Sir James Dundas-Grant drew a definite distinction between laryngismus stridulus and laryngitis stridulosa—the latter being the same as croup and occurring in rickety children. Perhaps the deficiency of calcium led to a relatively hyper-excitability of the nervous system, and such irritations as adenoids supplied the necessary stimulus. He discussed the laryngeal crises of tabes and their relief by local anaesthetization of the larynx, and the relief of functional aphonia by faradizing the lingual tonsil. Dr. W. H. Kelson (London) emphasized the fact that the ventricular bands formed a false glottis which at times became spasmodically closed. He discussed the difficulty of distinguishing between spasm of the adductors and paralysis of the abductors. The muscles which closed the airway happened to be stronger than those which opened it, and therefore the tendency of any nerve irritation was to cause closure. The excitability of the reflex mechanism was greater in children and especially in sleep, when the cortical centres were depressed. Dr. Peter Macdonald, the President, Mr. William Hill, Dr. A. J. Wright, Dr. Dan McKenzie, Mr. Somerville Hastings, Dr. Davidson (Queensland), and Mr. Mark Hovell all spoke.

Mr. William J. Leighton (Manchester) read a paper on organotherapy in diseases of the ear, nose, and throat. In many conditions organotherapy formed a useful adjuvant to other treatment, but it was difficult to lay down rules. He mentioned McCarrison's work on the relation between sepsis in the tonsil and other organs and thyroid activity.

The pituitary had become increasingly important, and headaches due to a derangement of the pituitary had to be diagnosed from sphenoidal disease. Diabetes, abnormal blood pressure, climacteric deafness, neuroses, hypothyroidism were all common causes of ear trouble, and were alike amenable to organotherapy. Dr. J. A. Gibb (Maidstone) read a paper on the referred pain of nasal sinus disease. The site to which pain was referred was often disregarded. Other viscera sometimes chose the same areas as did the nasal sinuses, and therefore observation should be backed by a thorough overhaul of the sinuses. The position and severity of the pain did not always depend on the severity of sinusitis. He detailed the areas for the various sinuses and gave cases illustrative of his thesis. Mr. Wright (Bristol), Mr. Woodman (Birmingham), and Dr. Jobson (Guildford) cited cases from their own experience. In the afternoon Mr. V. E. Negus read his paper upon a newly described function of the vocal cords in fixing the thorax during independent use of the fore limbs. He used facts from comparative anatomy in support of his argument. Sir J. Dundas-Grant read a short paper upon Canfield's operation upon the antrum. Mr. William Hill (London) read a paper upon butyn as a local anaesthetic in nose and throat work. He had found it capable of replacing cocaine in some cases, though not in all. It was two and a half times as expensive and less reliable. After the last paper Dr. Eastman Sheehan of the New York Post-graduate Hospital showed animated photographs of naso-plastic operations.

SECTION OF RADIOLOGY AND ELECTROLOGY.

Thursday, July 26th.

THE meeting of the Section was devoted to a discussion on medical diathermy, Dr. W. J. Turrell (Vice-President) taking the chair. The discussion was opened by Dr. E. P. Cumberbatch with a few words on the design of the present diathermy machines. He believed that larger and more powerful machines were needed; the machines at present made had often to be used "all out," and to give their maximum output of current. This left no reserve of power for use on occasions when the sensitive part of the machine—the spark-gap—was not in its best possible condition. The spark-gap also needed further improvement. Dr. Cumberbatch then spoke of the uses of diathermy in certain diseases, leaving infections by the gonococcus to be dealt with by a later speaker. One disease in which excellent results had been claimed for diathermy was angina pectoris; Nagelschmidt stated that after courses of treatment some of the patients remained free from attacks for months or years. Bordier spoke of the value of diathermy for the treatment of cold paralysed limbs in anterior poliomyelitis. Diathermy, in the speaker's own experience, was most valuable in the treatment of the pain and spasms accompanying haemorrhoids. Diathermy should be an efficient method of treatment of dysmenorrhoea by reason of its power to relieve congestion and painful spasmodic contraction. It should also be given a trial in cases of chronic para- and peri-metritis. Bordier recommended diathermy for coccygodynia. A few workers in the United States and Germany had tried diathermy for pulmonary tuberculosis. If diathermy possessed therapeutic action in pulmonary tuberculosis the benefit derived was likely to be due to the increase of blood and lymph supply to the affected parts, and perhaps to the increased secretion of mucus, not to a direct germicidal action, because a temperature high enough for this purpose could not be safely produced in the lungs. Dr. C. A. Robinson gave a brief account of some work which he had carried out on the treatment of gonorrhoeal affections by diathermy currents. He said that gonococcal infections of joints, of the cervix and urethra in females, and of the prostate and epididymis in males, were amenable to treatment by diathermy because by this means these parts could be heated to a temperature which for the gonococcus in these situations was lethal within the time of a treatment. Dr. Agnes Savill spoke of her experience with local diathermy for the treatment of gonorrhoea in women. Dr. Howard Humphris, in a further paper, touched upon the value of diathermy in cases of high blood pressure. High blood pressure might evidence itself in a variety of ways, none of them pathognomonic. This was a condition in which diathermy could do very much. The therapeutics of the current in lowering the blood pressure were twofold, one the general and constitutional effect on the metabolism and the other the local effect on the vasomotor system. Other conditions in which this current could be used were gout, anaemia, and wasting diseases. Dr. Turrell considered that the way to look at this question of medical diathermy was to have regard to the mode of action of diathermy and the manner in which it would apply to the particular case under treatment. Dr. G. B. Batten described his use of intensive high frequency in the treatment of haemorrhoids; he had used this method for twenty-five years, and the more he used it the better he liked it. Dr. C. B. Heald had found diathermy useful in gonorrhoeal infections. Professor Sidney Russ dealt with a number of points on the physical side, and other members of the Section asked questions to which Dr. Cumberbatch and Dr. Robinson made brief replies.

SECTION OF NAVAL AND MILITARY HYGIENE.

Thursday, July 26th.

AT the morning session Major M. Sinclair, R.A.M.C., read a paper on recent changes in fracture treatment, illustrated by lantern slides showing appliances *in situ*, result of *x*-ray examination, etc. In the discussion which followed Surgeon Captain D. W. Hewitt asked whether the opener advocated a pull from screws below the knee-joint in every case, and whether the age of the patient made any difference to the method used. The opener replied that callipers below the knee-joint were used when the skin was affected, but he would apply screws in all cases with marked displacement and irrespective of age. The stretching of the ligaments of the knee-joint, said to occur thereby, he did not consider of any importance. Captain Hewitt read a paper entitled "Some general remarks on naval surgery"; in the subsequent discussion the President pointed out the need for specialization to keep abreast of modern knowledge. Dr. J. Graeme Anderson read a paper on aeroplane accidents. This was illustrated by lantern slides showing photographs of the accidents described. Surgeon Commander Digby Bell remarked on the value of such a paper in co-ordinating the medical branches of the fighting forces. Dr. Stone (Northampton) inquired whether atmospheric pressure had much effect at high altitudes. The opener replied that the scope of the question was too wide for a reply in detail. He described some of the measures taken by pilots to avoid these ill effects; the process of becoming immunized was gradual.

In the afternoon Major Sinclair gave a demonstration of special appliances for the treatment of fractures. A ward in Haslar Hospital was placed at the disposal of the Section through the courtesy of Surgeon Rear-Admiral Alexander Maclean. The demonstration included (*a*) special instruments used; (*b*) a mobile *x*-ray plant with power furnished from a dynamo run from the wheel of an R.A.S.C. lorry, with which *x*-ray photographs were taken in the ward; (*c*) various modifications and adaptations of Thomas's splint, with which fourteen patients were fitted for demonstration purposes; (*d*) an extension exhibit of *x*-ray plates showing fractures before and after treatment; (*e*) net bed; (*f*) set of models; (*g*) other modifications of splints for allowing movements of fingers or joints of affected limb. After the demonstrations the members of the Section were shown over the Haslar Hospital and joined up with the garden party in the grounds, where tea was given by the medical officers attached to the hospital.

Demonstration of Physical Training.

On the afternoon of July 25th the Section of Naval and Military Hygiene assembled at the Royal Naval School of Physical and Recreational Training, Portsmouth, for a demonstration of the methods employed at the

school. There was an attendance of more than 100, including the Commander-in-Chief, Admiral Sir Sydney R. Fremantle, and other naval officers.

Surgeon Commander K. Digby Bell, R.N., first gave an outline of the course of instruction for students, and described the scope and requirements of physical and recreational training in the Royal Navy. He explained that the school was the headquarters of education for officers and petty officers wishing to take up this speciality in the Service, and added that the demonstration was arranged mainly to be of educational value to those attending. Physical education, he said, was a science requiring much study, and only those qualified ought to be allowed to give instruction. Since in a school dealing with picked recruits this subject was large and difficult, how much greater must be the need for a school of instruction for teachers who had to deal with the child and the ordinary type of physique encountered in civil life.

Practical demonstrations were then given under the direction of Commander T. M. Barrett, R.N., assisted by the staff and instructors of the school, illustrating the subjects taught and the methods of teaching employed. Swedish free-standing exercises were demonstrated to show the arrangement of various movements into groups which exercise all parts of the body in order, gradually increasing in physical effort to a high pitch of activity and then calming down to quieter finishing exercises. Other demonstrations included "activity exercises," fencing with sabre and bayonet, bar work, leaping and vaulting, methods of self-defence, trapeze work, and methods of teaching swimming.

At the close of the practical display, Surgeon Commander Digby Bell outlined some points for medical discussion arising out of the demonstration. He suggested that physical education, being obviously a branch of preventive medicine, needed more comprehensive organization, and he urged the British Medical Association to use its efforts towards concentrating medical attention on the matter. He indicated three chief requirements: (1) The setting up of an authoritative body of control, or recognized central committee; (2) a professorial chair of physical education at one or more of the universities; (3) the formation of a central gymnastic institute where directors, inspectors, and teachers of physical training must obtain a recognized qualification before being allowed to practise. Lastly, he expressed the hope that the demonstration had succeeded in showing his colleagues that physical training, as dealt with in the Navy and the sister services, was a large subject comprising a vast number of highly technical details which needed careful study and thorough practical application before a student was competent to instruct others. In asking for the active support of the British Medical Association, he mentioned the injury done to the cause of scientific physical training by the advertisements of so-called "experts in physical culture" who professed themselves able to cure almost every known ailment. Great harm was also done to the cause by the number of inexperienced teachers who, though keen and willing, had not received the training necessary to enable them to teach others.

Dr. Lockhart Stephens expressed appreciation of the fine display that had been given, and referred to the valuable work being done by the Navy for the improvement of the national physique. Surgeon Rear-Admiral Sir Percy Bassett-Smith (President of the Section) said how gratified the members were at the presence of the Commander-in-Chief, the Commodore of the Naval Barracks, and other naval officers, who by their attendance had shown interest in the discussions of medical men. The members were then entertained to tea at the officers' mess by Commodore Cyril Townsend and officers of the Royal Naval Barracks.

SECTION OF TUBERCULOSIS.

Thursday, July 26th.

THE second day's discussion, with Dr. R. A. Young in the chair, was devoted to the social aspects of tuberculosis, with special reference to its infectivity. Dr. Jane Walker said that the mortality rate of tuberculosis was certainly falling in this country; but it had been steadily going down for the past one hundred and fifty years and the recent decline could not be fairly ascribed to the extra work done. No doubt in the past we had paid too much attention to the seed of the disease without paying enough to the soil. Tuberculosis was without doubt largely an industrial disease. Dr. Walker then spoke of the good work carried out in sanatoriums where patients learnt a great deal, chiefly by small talks and advice given individually as well as the more general sensible outlook maintained. She mentioned the great importance of a really effective after-care machinery. The sanatorium should be linked up with the dispensary, which in turn should be in touch with employers of labour, and with organizations for helping the tuberculous person to supplement his earnings until he could support himself. Dr. Batty Shaw (London) said that the main point of this discussion was how tuberculous infection affected behaviour. A point, largely ignored by those who in this country had given the most time and thought to the subject of tuberculosis, was the importance of the varying pathogenic companions of the tubercle bacillus. There was no infection from pure tuberculosis; it had been shown to be impossible to produce excavation in lungs of animals by experimental inoculation of the tubercle bacillus. To stamp out tuberculosis was to attack the sources of infection and segregate those infected. Dr. Brookes Dixon (Birmingham) discussed the modes of infection from human sources: (1) sputum; (2) intestinal excreta; (3) urine of tuberculous patients; (4) milk of nursing mothers; (5) living carriers. He then dealt with how infection from human sources might be controlled: (1) By the adoption of measures designed to protect individuals who are exposed during the period when they are most susceptible—that is, during infancy and early childhood; and (2) by activities directed to the supervision and control of known sources of infection. Dr. J. E. Chapman (London) spoke of the after-care of tuberculous patients and instanced many cases in which care committees had done excellent work. He pointed out that poverty was an important factor in the causation of tuberculosis and that tuberculosis was itself in turn a cause of poverty. He held that the vicious circle thus formed could be broken by action on sociological lines as well as by appropriate medical treatment. Dr. Muthu (Mendip Hills) maintained that attention had been concentrated on the microbe rather than on man, who after all, was the chief factor in the drama. Tuberculosis was to a great extent a social, economic, and industrial disease. Facts observed from all parts of the world showed a positive correlation between density of population and the death rate from tuberculosis. Dr. Vere Pearson (Mundesley) said that notification of tuberculosis was largely ineffective in that it was incompletely carried out. It should mean more frequent examination of contacts and of home conditions. Dr. R. A. Young emphasized the importance of the social aspects of the disease—namely, infectivity, home conditions, family care, after-care, and occupation. He maintained, however, that the last word would be with the bacteriologist regarding the control of the spread of the disease.

THE first Dutch Congress of Public Health will be held in Amsterdam in the second half of September, when the following subjects will be discussed: (1) Milk supervision in large towns; (2) instruction of social workers.

THE twelfth Italian Congress of Stomatology will be held at Turin from September 19th to 22nd, when the following subjects will be discussed: Surgical treatment of radicular cysts, introduced by Dr. A. Campiglio; social value of dental prosthesis for workmen, introduced by Dr. A. Brusotti; and modern views on pyorrhoea alveolaris, introduced by Professor S. Palazzi and Dr. G. Tomasi.

THE sixth congress of the German Society of Urology will be held in Berlin from September 26th to 29th, when the following subjects will be discussed: Urology and the constitution, introduced by Dr. Posner; twenty-five years' ureteral catheterization, introduced by Dr. Casper; the ureter and renal pelvis, introduced by Drs. Du Bois Reymond and Blum; surgical treatment of nephritis, introduced by Drs. Kümmell and Volhard; colloid chemistry of the urine, introduced by Dr. Roma; and surgery of the vas deferens, introduced by Dr. von Lichtenberg.

Reviews.

BRITISH PHARMACEUTICAL CODEX, 1923.

THE appearance of the new edition of the *British Pharmaceutical Codex* will be welcomed by all those interested in the use of drugs, either as medical practitioners or pharmacists. Its general character is indicated in its full title, *The British Pharmaceutical Codex, 1923; an Imperial Dispensatory for the Use of Medical Practitioners and Pharmacists.*[1] The book is published by direction of the Council of the Pharmaceutical Society of Great Britain, and has been prepared by a committee composed of pure chemists, pharmacists, manufacturing chemists, and pharmacologists. Hence the origin, mode of preparation, mode of dispensing, and the actions, of drugs are all described by experts. The first edition of the *Codex* was published in 1907, and the second in 1911; supplements were published in 1915 and 1922; the present volume is the third edition.

The object with which the compilation was made is stated in the preface to the first edition:

> "The scope of this work may well be defined by describing the book as an imperial dispensatory for the use of medical practitioners and pharmacists, since it contains information respecting all drugs and medicines in common use throughout the British Empire, including the principal substances and preparations which are official in the pharmacopoeias of France, Germany, and the United States, as well as those described in the *British Pharmacopoeia*. The chief aim of the work is the provision of accurate information for prescribers and dispensers, special attention being given to the requirements of those practising in the British Dominions beyond the seas."

The new edition is only slightly larger than the last and follows the same general arrangement. Short monographs on the various drugs fill about three-fourths of the space, and the British Pharmaceutical Codex Formulary, which gives many hundred standard formulae together with directions for their preparation, occupies the remainder. The book also contains various useful tables of constants, and a new feature appearing in this edition is a table of the coefficients of expansion of various liquids.

Medical practitioners will find the formulary of value and convenience, for it contains convenient formulas for preparations for the most diverse purposes. They range from hair lotions and corn paints to mystic compounds such as Warburg's tincture, which, we believe, is the last remaining relic of the famous old mediaeval theriac.

The monographs on drugs form, however, the most important portion of the book. In the case of each drug the monograph gives an account of the raw materials from which it is prepared, a description of the chemical and physical properties of the drug and the recognized tests for its purity, and finally the pharmacological actions and therapeutic uses of the drug are described. The account of the actions and uses of the drugs have been very carefully prepared, and all the most recent information has been incorporated, so that the *Codex* is, amongst other things, practically a textbook of pharmacology and therapeutics.

As an example of the scope of the work the case of quinine may be taken. Three pages are given to the description of cinchona bark and its preparations, and nearly three more to the chemical, physical, and pharmacological actions of quinine; in addition, short accounts are given of the properties of twenty-two salts of quinine, and there are monographs also on quinoidine, cinchonine, cinchonidine, and quinidine. The description of quinine includes a short account of the properties of the quinine derivatives described by Morgenroth, and there is a separate monograph on one of these—namely, ethylhydrocupreine hydrochloride, or optochin.

A comparison between the present edition and the last shows that the whole work has been carefully revised, and that many monographs have been completely rewritten. The number of entirely new monographs is, however, small. The chief drugs which did not appear in the edition of 1911 or supplement of 1915 are acriflavine, emetine bismuth iodide, colloidal solutions, oil of chaulmoogra, dried parathyroid, quinidine, radium, and antibotulinus serum.

The reason why so few new drugs of importance have appeared in the past eight years is, we believe, that pharmacological advance has been chiefly along the lines of finding new uses for old drugs, and also towards finding new and more powerful derivatives of existing compounds. The number of new monographs in the *Codex* does not of course give any indication of the changes in pharmacology that have occurred—for example, insulin is described in the new edition, but is placed under the old heading of pancreatin. Similarly the account of the action and uses of the organic arsenic derivatives, of antimony compounds, and of emetine have all been rewritten.

We have given an indication of a few of the salient features of this very valuable book of reference. We feel that the committee which prepared the work is to be congratulated on the very thorough manner in which it has been revised and brought up to date. The only criticism that we venture to make is that the work would be improved by the deletion of some of the drugs described—for example, nine pages are occupied by the description of fourteen different salts of lithium, and in each case it is stated quite correctly that the action is the same as that of the corresponding salt of potassium or sodium. The need for these compounds, therefore, does not appear obvious. Perhaps such a censorship is impossible, but it seems a pity that a useful book of reference should be encumbered with the débris of forgotten superstitions.

The general value of the *Codex* is evident to anyone who has used it. In the preface to the first edition the editors pointed out that the official pharmacopoeias only contained an account of a portion of the drugs in general use. This statement is even truer to-day, and is particularly true of the *British Pharmacopoeia*, which contains no account of many of the most important drugs we possess. It is true that various excellent supplements to the pharmacopoeias have been published, but these do not lessen the value of a book like the *Codex*, which gives a critical and authoritative account of the value of most of the newer materia medica.

[1] *British Pharmaceutical Codex, 1923.* An Imperial Dispensatory for the Use of Medical Practitioners and Pharmacists. New and revised edition. Published by direction of the Council of the Pharmaceutical Society of Great Britain. London: The Pharmaceutical Press. 1923. (Demy 8vo, pp. vii+1669. 30s. net.)

OCULAR NEUROLOGY AND PHYSIOLOGY.

AFTER the nine large volumes on the neurology of the eye by Willbrand and Saenger which we owe to the German publishers, it comes as a relief to find that in the small volume by DE LAPERSONNE and CANTONNET, of which a second edition[2] has appeared, we have an adequate exposition of the subject. It is ten years since the first edition was published, and so many new facts have been discovered in these fateful ten years that it has necessitated a complete revision as well as a recasting of the text. It is a pity that there is no similar work of the same size and price in the English tongue, for there is a distinct need of one; meanwhile the book now under review will fill the gap in the library of the ophthalmic surgeon admirably. The first part deals with the motor apparatus, the visual apparatus, the sensorium, and the vasomotor and secretory functions; each chapter discusses its subject under the familiar headings of anatomy, physiology, clinical examination, symptoms of lesions, and semeiology. The second part of the book deals with ocular neurology in diverse conditions. This part forms roughly two-thirds of the book, and at its termination is given a very convenient schema for the examination of a neurological eye case. The second part deals with local affections in the neighbourhood of the eye, and with the nervous, digestive, respiratory, circulatory, renal, and genital systems; the final chapters are on autointoxications, intoxications, and infectious diseases. An excellent index completes a work which reflects great credit on authors and publishers; the illustrations are most helpful; the whole book forms a very compact and up-to-date manual of ocular neurology, and as such is very welcome.

[2] *Manuel de Neurologie Oculaire.* By F. de Lapersonne and A. Cantonnet. Second edition. Paris: Masson et Cie. 1923. (Med. 8vo, pp. 415; 113 figures, 4 plates. Fr. 20 net.)

It was a happy idea of M. TERRIEN'S to bring out a book on ocular semeiology,[3] the pathology of symptoms, for, so far as we know, the only other work with a similar title is that of Beard, which was published in the United States more than ten years ago. The author insists that to do justice to this segment of the eye a work of five divisions is necessary; these he names as follows: the corneo-scleral cap, conjunctiva, and anterior chamber; the ciliary body, iris diaphragm, and pupil; the lens and its suspensory ligament, glaucoma, and sympathetic ophthalmitis; the external ocular muscles; and lastly, variations in position of the eye in the orbit, exophthalmos, and enophthalmos. The present volume deals with the first of these sections. It is divided into two parts. In the first, treating of anatomy, physiology, and clinical examination in the living subject, stress is laid on the importance of using such more modern aids to examination as the corneal microscope and slit lamp. In the second part the diseases of the corneo-scleral hull, infiltrations, ulcerations, cicatrices, and degenerations of the cornea and inflammation of the sclerotic, conjunctivitis and affections of the conjunctiva are considered. The last part is devoted to contusions, ruptures, and perforating wounds of the globe. It will be seen that the table of contents is sufficiently comprehensive; the illustrations are good. We congratulate the author on his work, and shall look forward to receiving a further instalment, in which the rest of ocular semeiology will be reviewed.

METABOLISM AND DERMATOLOGY.

WHILE some dermatologists are striving to explain the phenomena of eczema and urticaria in terms of anaphylaxis or acquired sensitiveness to certain proteins either in food or in substances with which the patient is brought somehow into contact, another school is trying to correlate these and other dermatoses with definite chemical changes in the blood and tissues. Of the latter class of investigators Dr. ERWIN PULAY is a distinguished member, and his recent book[4] *Stoffwechsel und Haut* forms a very interesting contribution to the study of blood chemistry, especially in its relation to dermatology. There can be little doubt that work on these lines must sooner or later yield valuable results. It is the effort to find a scientific basis for the popular explanation so often given by sorely tried physicians to their unfortunate patients who constantly demand to know the cause of their condition, that there is "something the matter with the blood." Frequently this is no doubt, strictly speaking, quite true, but in the present state of our knowledge of biochemistry it is usually impossible to state with any degree of scientific accuracy what biochemical fault is really present. There is singularly little real scientific truth in the common phrase often accepted as an adequate explanation by many who might be expected to know better: "too much acid in the blood." As a matter of fact modern research tends to show that the reaction of the blood is singularly constant, and it is only in the most profound pathological changes that it varies at all. The variations in the chemistry of the blood and tissue fluids which are correlated with such affections of the skin as eczema, urticaria, lichen planus, psoriasis, etc., are far too delicate and difficult to detect with a piece of litmus paper.

Dr. Pulay has concentrated his attention on the estimation in the blood of sugar, cholesterin, uric acid, calcium, chlorine, and the residual nitrogen after removal of protein. He also lays stress on the importance of estimating the concentration or water content, which is a difficult and laborious investigation in itself, and on the estimation of the volume of the blood corpuscles. All these difficult estimations and investigations Dr. Pulay succeeded in getting carried out for him on numerous patients in the laboratories of Vienna. The amount of work and time necessary for their completion in each case is obvious to anyone who has even a nodding acquaintance with the methods of biochemistry. It may be permissible to inquire whether there is any dermatologist in London at the present time, where conditions in general are far superior to those existing in Vienna, who would be able to command facilities for such extensive and laborious researches unless he founded and subsidized his own laboratory. As regards the results obtained, it is too early to draw any definite conclusions, but in some diseases Dr. Pulay has provided interesting data. Patients suffering from eczema appear to show excess of uric acid, cholesterin, and sugar in the blood. Excess of uric acid and cholesterin is also present in urticaria. Another interesting point which emerges from the blood investigation of urticaria is that in all cases there is an excess of calcium. It will be remembered that some years ago Sir Almroth Wright advised the exhibition of calcium salts in urticaria with the idea of increasing the viscosity of the blood and thus hindering exudation into the tissues and the production of wheals. According to Dr. Pulay, to give calcium salts to a sufferer from urticaria is comparable to the transport of coals to Newcastle; this may explain the many clinical disappointments experienced by those who have followed Sir Almroth Wright's advice in this matter. One of the conditions Dr. Pulay has studied in some detail is lupus erythematosus; he comes to the conclusion that in the chronic discoid form of that puzzling disease abnormal intermediate products of metabolism allied to uric acid are acted upon by light as a catalysing agent.

The author is a pioneer in a field where the work is difficult and laborious. It may easily be that present methods are still inadequate to the task of elucidating the chemical problems of dermatoses associated with errors of metabolism, but it must be conceded that he is trying to advance in the right direction, and his book deserves study both by dermatologists and biochemists.

MEDICAL CHRONOLOGY.

WE welcome the appearance of the *Chronologia Medica*[5] compiled by Sir D'ARCY POWER and Mr. THOMPSON, because books of that class are often the means of widening the circle of those who take an interest in the important subject of the history of medicine. The book will also appeal to the more instructed in the subject, for in the handy form in which it is issued it affords a ready means of verifying dates and other facts connected with the history of medicine and science generally. Other books, it is true, have been written which give full and accurate information concerning medical writers and their works, but they are unwieldy, occupy many volumes, and do not carry the chronology of medicine and science down to our own times. Hutchinson and Munk have done more for medical biography than most men, but the extent of those works renders them not very accessible for the purpose of rapid reference.

In the book before us the attempt has been made to give in chronological order a brief biography of all those who have advanced the subjects of medicine and science. But in the small compass in which the book is contained it was obviously impossible to do more than indicate briefly the most important works and the discoveries made by each man. The chronological form in which the work is written necessitates a reference to the index at the end of the volume if information be desired concerning any particular person, but the index is accurate and may be trusted. Besides biographies, the book contains excellent lists of the dates of the discovery of drugs and the foundations of universities.

Works of this kind which deal with dates, periods, and names must conform to two cardinal principles: they must be accurate, and they must be complete. One fact stated inaccurately may become the genesis of an error which may be perpetuated for ages. Then again absence of important names in a book of this kind may prejudice the reader should he fail to find an account of the particular person concerning whom he desires information. We find the book accurate and trustworthy, but we do not find it as complete as we could wish. Names have been omitted which we feel sure will be supplied in the further edition the excellence of the book most certainly deserves. To this end we venture to call the attention of the authors to some of the names we have failed to find, but which are worthy of

[3] *Sémiologie Oculaire. La Calotte Cornéo-Scléral: Anatomie—Physiologie—Pathologie.* By F. Terrien. Paris: Masson et Cie. 1923. (Roy. 8vo, pp. 260; 141 figures. Fr. 25 net.)

[4] *Stoffwechsel und Haut.* Von Dr. Erwin Pulay. Berlin and Vienna: Urban and Schwarzenberg. 1923. (Sup. roy. 8vo, pp. x+240.)

[5] *Chronologia Medica.* By Sir D'Arcy Power, K.B.E., F.R.C.S., and C. J. Thompson, M.B.E. London: John Bale, Sons and Danielsson. (8vo, pp. 4+278. 10s. 6d. net.)

inclusion. They are as follows: Auenbrugger, the father of the method of percussion; Willan and Bateman, the founders of modern dermatology; Sir James McGrigor, the father of modern military medicine; James Lind and Gilbert Blane, the founders of modern naval medicine; Ray, who did so much for botany; and Stephen Hales, whose labours in connexion with physiology and physics were so successful. Besides these we think the names of Sir William Jenner, Sir Thomas Watson, Sir George Baker, William Prout, Wollaston, Blackall, Galileo, and Connolly should find a place in the work.

But apart from this criticism we commend the book for its excellence, and we hope that it will meet with such success that another and more amplified edition will soon be required.

HEREDITARY HAEMOLYTIC JAUNDICE.

THE book by Dr. E. MEULENGRACHT of Copenhagen on chronic hereditary haemolytic jaundice[6] is a valuable monograph on a rare but interesting familial disease. Claude Wilson in 1890 published an account of six cases occurring in three generations of one family, describing the condition as "hereditary enlargement of the spleen"; Murchison had indeed previously recorded incomplete notes of three cases in 1875. Minkowski in 1900 greatly extended our knowledge, both clinical and pathological, of the condition. In an account of eight cases in one family he emphasized its main clinical features—the enlarged spleen, the jaundice with bile absent from the urine but present in the stool, the excess of urobilin in the urine, and the chronic course. In one case examined *post mortem* he found that the splenic change consisted in hyperaemia and hyperplasia of the stroma. In succeeding years other cases were described, and knowledge of the condition was extended. The observations of Chauffard were the most important, demonstrating microcytosis of the red cells, the presence in them of peculiar granules, and their lowered resistance to haemolysis in hypotonic saline (*fragilité globulaire*). Chauffard insisted that the disease was one of the blood and spleen, and not of the liver. The condition became known as Minkowski-Chauffard's disease. In later years cases have been described in the British journals as congenital family jaundice or acholuric jaundice; and occasionally in America as dissociated jaundice. Dr. Meulengracht has collected fifty cases since 1914; thirty-four of them he had under careful and prolonged observation; of these, twelve have been submitted to splenectomy with good results. He gives a most complete and detailed account of these cases—their clinical and family history, and the condition of the blood cells (in the operated cases both before and after operation). This large number of cases, their careful examination by modern haematological methods, and the thorough study of the literature, combine to make this book a standard contribution to the subject.

THE CLINICAL LABORATORY.

FIVE-AND-TWENTY years ago the general practitioner was shy at calling in the laboratory worker to aid him in completing a diagnosis, and even in the large hospitals there was very inadequate provision for rendering this assistance. Nowadays it is a daily occurrence to postpone a definite diagnosis until a laboratory report has been received, and if he would derive the maximum amount of information from that report the practitioner must be acquainted with the methods adopted in its production. For this there could be no better guide than Dr. CHARLES E. SIMON'S *Manual of Clinical Diagnosis by means of Laboratory Methods*, the tenth edition[7] of which with its 1,100 pages—or double the number of the first edition, published in 1896—is evidence of the great advances which have been made in clinical pathology as an aid to diagnosis. Great as these advances have been, Dr. Simon considers they are insignificant in comparison to actual possibilities, and he looks forward to the day when at every hospital of first rank there will be a real clinical laboratory, in charge of a real clinical pathologist ranking equally with the surgeon and physician. In the section devoted to the diagnosis of syphilis the Wassermann reaction is very concisely and clearly described, and a study of the details of the author's modification of the technique leads to the conclusion that his method of procedure has been well thought out. A very practical point is dealt with in the few pages devoted to the behaviour of the blood serums of different individuals and to the categorizing or grouping of different types. The importance of this grouping becomes evident when a donor for the purpose of blood transfusion has to be selected. In the past, writes Dr. Simon on page 246, surgeons have largely been in the habit of accepting donors whose blood gave rise to agglutination only but not to haemolysis when brought together with the recipient's blood.

The arrangement of the book does not differ materially from that of the immediately preceding editions. The first part is concerned with general principles and technique, and the second part—nearly one-third of the volume—with the essential factors in the laboratory diagnosis of various diseases. In this second part the author deals in alphabetical sequence and in more or less detail with a very large number of diseases in their relation to laboratory diagnosis. Dr. Simon is lecturer in medical zoology in the School of Hygiene and Public Health of the Johns Hopkins University, and in this capacity appears to have acquired a facility of expression which is noticeable throughout the volume. There is an utter absence of pedantry, and he is so seriously impressed with the importance of his subject that his enthusiasm is passed on to his readers. A great injustice would be done to the publishers if no reference were made to the excellence of the illustrations. The twenty-three coloured plates call for special commendation.

PUBLIC HEALTH AND MEDICAL INSTITUTIONS IN SAXONY.

WE have received a copy of a sumptuously produced volume on the public health and welfare system of Saxony,[8] which has been compiled to commemorate the centenary of the first meeting of the German Society of Naturalists and Physicians, held at Leipzig in 1822.

The volume contains a well illustrated account of all institutions directly or indirectly concerned in the study or administration of public health, and does not lend itself to summarization. In view of the topical interest of schemes of post-graduate instruction, we may, however, summarize the summary of activities under this heading.

The earliest foundation with this character was the Medical and Surgical Academy, which dates back to 1815. It was for long the only institution in Germany giving post-graduate instruction in midwifery and gynaecology, and to this day four-weekly courses in spring and summer are largely attended at Dresden. The next foundation was the Pathological Institute of the Dresden-Friedrichstadt Hospital (1850), where Professor Schmorl now gives post-graduate courses in pathology.

Since 1901 there has also been a special association under whose auspices combined classes are held by the staff of the various hospitals and institutions of Dresden, which cover the whole field of practical medicine. Under the auspices of a national committee, formed in 1907, courses were also given in Leipzig, Chemnitz, Zwickau, and Zittau. The various committees were affiliated to a central committee at Berlin in 1908.

The war-time spread of venereal diseases led to the institution of special courses of instruction in early diagnosis and treatment, held, in 1922, in six cities by various experts. No fees were charged, but the travelling

[6] *Der chronische hereditäre hämolytische Ikterus.* Von E. Meulengracht. Leipzig: Dr. Werner Klinkhardt. 1922. (Roy. 8vo, pp. vi+226; 5 plates.)

[7] *A Manual of Clinical Diagnosis by means of Laboratory Methods.* By Charles E. Simon, B.A., M.D. Tenth edition, enlarged and thoroughly revised. London: Henry Kimpton. 1922. (Medium 8vo, pp. xxiv + 1125; 233 figures, 23 plates. 42s. net.)

[8] *Einrichtungen auf dem Gebiete der Volksgesundheits- und Volkswohlfahrtspflege im Freistaat Sachsen.* Dresden and Leipzig: T. Steinkopf. 1922. (Cr. 4to, pp. viii+409; illustrated. 8s. 5d.)

expenses of participants were defrayed and the whole expenses charged to public funds. Similar arrangements have been made for post-graduate instruction in the early diagnosis and treatment of cancer, in tuberculosis and in welfare work. Special provision is made for refresher courses for the district surgeons (Bezirksärzte). The existing arrangement is that 50 per cent. of the district surgeons receive ten days' study leave every four years, which is devoted to public health and welfare work. Instruction is given alternately in Dresden and Leipzig. There is also an official system of post-graduate clinical assistantships, tenable in most of the great hospitals of Saxony.

The various institutes of the University of Leipzig are described. It may be hoped that the Rockefeller gift will provide London with a hygienic institute not inferior to that of Leipzig. Whether anything comparable to Professor Sudhoff's historical-medical institute, with its printed library of 16,000 volumes and manuscript collection of more than 20,000 examples, is a probability of the near future, is a much more doubtful question. A perusal of this volume will convince the reader that much is to be learned from Germany. Probably he will regret that circumstances still seem to prevent full scientific co-operation and frank exchange of ideas with the medical profession of Germany.

HOSPITAL REPRINTS.

The first volume of *The Clinics and Collected Papers of St. Elizabeth's Hospital*, Richmond, Virginia,[9] is a record of great activity displayed by the staff of a private unendowed paying hospital with 50 beds, which in 1921 dealt with 841 patients and had 20 deaths (2.4 per cent.). The price of a room is from 4.50 dollars a day, but the question of medical and surgical fees is not mentioned. The volume contains sixty-four papers including three short accounts of the management of the hospital, records of interesting cases, four of which have been previously published in the *Surgical Clinics of North America*, and collected papers published elsewhere. There are forty contributions by Dr. J. Shelton Horsley on surgical and gynaecological subjects, among which are addresses on the ideals of the surgeon and on biological principles in surgical practice; in the first of these he follows R. C. Cabot in advising that a patient if told anything should be told the truth, and that when this is done tactfully it upsets the patient much less than is usually believed; he adds that if a doctor deliberately deceives a patient, he cannot expect any more confidence than would be given to a chiropractor or an osteopath, for there is little to choose between honest ignorance and knowledge combined with deliberate intent to deceive. This author's other papers touch on nearly every branch of surgery; the alimentary canal naturally receives much attention, and experimental investigations are related on reconstruction of the common bile duct and on reversal of the circulation in the lower extremity or arterio-venous anastomosis which has been employed in cases of thrombo-angeitis obliterans. Among Dr. Warren T. Vaughan's eleven papers on internal medicine that on the "Philosophy of Medical Diagnosis" compares the process to the work of a detective, and insists that the study of functional pathology has succeeded the structural pathology of the last quarter of the nineteenth century. In their article on "Post-operative Dietotherapy" Dr. Warren T. Vaughan and Miss N. H. Van Dyke, dietitian to the hospital, show the futility of albumin water as a food, and point out that patients should leave the hospital weighing at least as much as before operation and that this can best be effected by a diet relatively high in calorie value and in carbohydrates. Miss Helen Lorraine's account of "Medical Illustrating" contains a condensed history of the subject. The concluding paper by Dr. J. S. Horsley, jun., on the anatomy of a six-legged dog, a duplicate monster designated "dipygus dibranchius tetrapus," is, like the rest of this finely produced volume, admirably illustrated.

The Collected Papers from the Washington University School of Medicine,[10] St. Louis, is also the first of a series of annual volumes and its contents are selected from a number of published papers which would have occupied four times the space of the present instalment. As it is there are sixty-three papers chosen on the ground of predominant clinical interest and occupying over 1,000 pages. Professor George Dock, who has now given up his post, opens the ball with an address given in 1919 on the social trend of medicine and speaks plainly and in far from optimistic terms about the position of the medical profession. His account of a visit to a chiropractic school is equally outspoken. His third article is on focal infection and arthritis. Dr. Evarts Graham contributes papers on some surgical aspects of asphyxia, on the association of hepatitis with experimental cholecystitis and its bearing on the pathogenesis of cholecystitis in the human subject, on the treatment of empyema, and on the influence of respiratory movements on the formation of pleural exudates. Professor Leo Loeb of the department of comparative pathology writes on the effect of undernutrition on the mammalian ovary and the sexual cycle, and reviews our knowledge of the causes of cancer. In three articles Dr. P. A. Shaffer deals with the subject of ketogenesis and the mechanism of antiketogenesis. From the department of pediatrics papers are provided by Dr. W. McKim Marriott on some phases of nutrition in infants and by Dr. Kirsten Utheim on metabolism in athrepsic infants. Six cases of camphor oil tumours due to hypodermic injection in cases of collapse are described by Drs. Mook and Wander with a coloured plate; in none of them did necrosis follow, as may occur in paraffinomas which resemble them in their slow development. In the addresses on the neurological dilemma, a title suggested by William James's "Present Dilemma in Philosophy," Dr. S. I. Schwab insists that there is no psychiatric method of thinking or approach which logically can be divorced from the neurological.

NOTES ON BOOKS.

In the seventh edition of Sir William Whitla's *Dictionary of Treatment*[11] the surgical sections have been revised by Mr. T. S. Irwin, and Professor R. J. Johnstone has brought up to date his original articles in the gynaecological section. The work as a whole has been well brought up to date so as to include some account of botulism, Epstein's diet in Bright's disease, the intracardiac injection of adrenaline in collapse, the insulin treatment of diabetes. The only error which we have been able to detect after a fairly close scrutiny of this excellent work is the attribution of the paternity of the "fourth disease" to the late Mr. Clement Lucas instead of to Dr. Clement Dukes (p. 887). A medical work which has reached its seventh edition requires no further recommendation, but we may point out to those not familiar with it that this volume possesses the great advantage of including articles on obstetrical and gynaecological subjects which are omitted in at least two other well known dictionaries.

With its July number the *British Journal of Surgery* enters upon its eleventh year of issue. It may be congratulated on the high standard it persistently attains both in its articles and in its production. It may fairly be said that the *British Journal of Surgery* is the most beautifully produced scientific journal in the world, and its coloured illustrations attain a technical standard which is unsurpassed even by the best art periodicals. The long continuance of the war greatly handicapped the production of the journal by doubling, and at one time actually trebling, its cost, but by the support of its subscribers it was able to weather the storm. With the commencement of the present volume the publishers announce that they find themselves able practically to return to pre-war conditions; the type has been improved, and the pages increased to 200 in each number.

[9] *Clinics and Collected Papers of St. Elizabeth's Hospital*, Richmond, Virginia. Vol. I. London: Henry Kimpton. 1923. (Med. 8vo, pp. 560; 218 figures. 37s. 6d.)

[10] *Collected Papers from the Washington University School of Medicine*, Vol. I. 1921. London: Henry Kimpton. 1923. (Med. 8vo, pp. 1079; 347 illustrations. 60s.)

[11] *A Dictionary of Treatment, including Medical and Surgical Therapeutics*. By Sir William Whitla, M.D., D.Sc., LL.D., M.P. Seventh edition. London: Baillière, Tindall, and Cox. 1923. (Demy 8vo, pp. viii + 1100. 25s. net.)

The "*Queen*" *Book of Travel*,[12] which has been compiled by Mr. M. HORNSBY, the travel editor of the *Queen* newspaper, is a compact little annual which has now reached its sixteenth year. In addition to a concise account of the principal British and foreign resorts it contains a large quantity of miscellaneous information, including a description of spas in Great Britain, practical hints on travelling in various countries, the names of English doctors practising abroad, and a list of books suitable for the traveller's library. The volume has fifteen excellent maps and numerous photographs of British and foreign resorts.

The volume entitled *The Older Universities of England: Oxford and Cambridge*[13] gives a fascinating account of their development and activities. It is based on a course of lectures delivered on the Lowell Foundation in March, 1922, by Mr. ALBERT MANSBRIDGE, who, though not educated on the banks of either the Isis or the Cam, shows a profound knowledge of his subject, and must therefore have been an unbiased and most efficient member of the Universities Commission (1919–22) appointed to consider the condition and wants of the two universities and make recommendations. The volume contains much interesting biographical material and many stories illustrative of the attitude and life of university dons; on this account alone it will be much appreciated by the sons of the universities. But this is only a minor feature in a book primarily concerned with the future of Oxford and Cambridge and how best they can fulfil their high educational mission. The line of their past development has been in the direction of becoming efficient post-graduate institutions, and the author's opinion coincides with that of Sir E. Rutherford, who has said that "the future of the universities and the reputation of the countries to which they belong will ultimately depend to a large extent on the development of post-graduate teaching." Medical matters are only mentioned incidentally, and the main reference is to Sir William Osler's appeal in his address to the Classical Association (1919) for the closer union of humanism and modern science.

Messrs. E. and S. Livingstone (16 and 17, Teviot Place, Edinburgh) have published in a small volume (2s. 6d., by post 2s. 9d.) the papers set in 1920–23 for the medical degrees of the University of Edinburgh, and the diplomas of the Royal College of Surgeons and the Royal College of Physicians of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, including the D.P.H. The same firm has published in a separate volume (price 2s., by post 2s. 2d.) the papers set in 1919–23 for the Fellowship of the Royal College of Surgeons of Edinburgh.

[12] *The "Queen" Newspaper Book of Travel: A Guide to Home and Foreign Resorts.* Compiled by the Travel Editor (M. Hornsby, F.R.G.S.). Sixteenth year. London: The Field Press, Ltd. 1923. (4×7¼, pp. xii + 493; with 15 maps and 80 illustrations. 4s. net.)

[13] *The Older Universities of England: Oxford and Cambridge.* By A. Mansbridge, Hon. M.A.Oxon., Hon. LL.D.Manchester. With drawings by J. Mansbridge. London: Longmans, Green, and Co. 1923. (Demy 8vo, pp. xxiv + 296; 9 plates. 7s. 6d. net.)

THE DIETING OF THE INSANE.

CONSEQUENT upon the report of the Departmental Committee on the Administration of Public Mental Hospitals, which recommended that an attempt should be made to relieve the monotony of the diet at these institutions, the Mental Hospitals Committee of the London County Council has been considering possible improvements in the dietary with a view to more appetizing meals and an increase in food value. The dietary scale which has obtained hitherto at the London mental hospitals provides for *per capita* issues of the principal articles of food, such as bread, meat, and vegetables, for each meal. The medical superintendents believe that if the dietary scale were expressed in terms of weekly quantities for every 100 patients, and not *per capita* for each meal, with fixed formulae, it would afford them the opportunity of arranging the meals differently and of introducing more variation.

In a special report to the Committee of the Council the medical superintendents point out that the problem of dieting the insane stands apart from that of the dieting of the general population. On the one hand, the insane live under sheltered conditions, they are not subjected to the same mental and physical strain of the struggle for existence, they are under close medical and nursing supervision, and they are specially dieted on any sign of physical deterioration or disease. On the other hand, certain special precautions have to be taken: the proteins, especially those of meat, have to be restricted because they tend to overstimulate the metabolism and produce restlessness and excitement, but at the same time their undue restriction has to be guarded against because it would mean the lessening of the patient's ability to resist infections; again, the insane commonly suffer from intestinal stasis, and therefore fresh food, especially garden produce, is indicated; few of the insane take or can take really healthy exercise, and plenty of readily digested carbohydrates are essential to maintain warmth and avoid chills; vitamins also are specially important in view of the frequently lowered physical vitality of these patients and the fact that they are specially subject to auto-intoxications.

The Committee has worked out a new scale under which the daily *per capita* calorie value of the issues (including an allowance of 10 per cent. for waste) averaged over one week is not to fall below a minimum of 3,200 calories for men and 3,000 for women, presuming that these patients are on ordinary diet. It has also been decided to increase the diet in respect of fats and improve it as regards vitamins. The cooked ration of meat is, therefore, to be increased by 1 oz. per head per meal, and green vegetables are to be increased from 4 oz. to 6 oz. per issue per patient. These two modifications will increase the cost by 4¾d. a head a week, or a total of £9,700 for the six months for which it is proposed the new dietary should be tried. Otherwise the adoption of the new scale, although it provides for greater elasticity in application than the present scale, should not lead to any increase of cost. The medical superintendents had asked that margarine be substituted by good Danish butter, but the Committee finds itself unable to agree to this proposal, though it is considering the possibility of obtaining supplies of better-class margarine. The revised weekly dietary for each 100 patients is to be as follows:

	Males. lb.	Females. lb.
Bread	771–816	646–693
Fats (including suet)	65¼	65¼
Tea	17½	21
Sugar	84	93
Milk	383½ pints	425¼ pints
Cheese	43¾	43¾
Meat (cooked without bone) ...	140⅜–142⅜	131–133
Bacon (cooked without bone) ...	15⅜	12¼
Vegetables (prepared and uncooked)	586¼–592¼	511¼–517¼
Fish (uncooked)	64¼	58
Cereals	47¾	47¾
Flour	56	56
Jam, honey, or treacle ...	40¾–68	43¾–68
Pulses	17¼	17¼
Dried fruit	7¼	7¼
Cake	131	131

The medical superintendents have power to make certain variations as between the amounts of the different items as the result of experience, and there are regulations for substitute diets to be allowed in the case of patients unable to take the ordinary dinner. For non-working patients the scale is to be reduced by the following quantities:

Males: Bread 131¼ lb., cheese 43¾ lb., tea 3½ lb., sugar 14 lb., milk 42 pts.

Females: Bread 131¼ lb., cheese 43¾ lb., tea 7 lb., sugar 28 lb., milk 84 pts.

All articles of food not included in the dietary are deemed to be "medical comforts," and are to be accounted for accordingly.

THE thirty-second French Congress of Surgery will be held in Paris from October 8th to 13th under the presidency of Dr. Témoin. The following questions will be discussed: (1) Transfusion of blood, introduced by MM. Jeanbrau, of Montpellier, and Victor Pauchet, of Paris; (2) critical study of operations for genital prolapse, introduced by MM. Bégouin, of Bordeaux, and Savariaud, of Paris; (3) treatment of non-calculous obliteration of the principal bile ducts, introduced by MM. P. Matthieu, of Paris, and Villaret, of Lyons. Further information can be obtained from the General Secretary, 12, Rue de Seine, Paris.

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THE SOCIAL ASPECTS OF MENTAL DEFECT.

IN this issue we publish a full report of the proceedings of the Section on Medical Sociology at the Portsmouth Meeting. The subject under discussion was "Mental deficiency in its social aspects." The national importance of this subject is very great; but is not by any means fully realized either by legislators and administrators generally or by the medical profession itself. The medical and social problems involved in mental deficiency are closely inter-related. They are of extreme interest and ramify into many fields of thought and of activity. The eugenist, the social worker, the teacher, the doctor (whether general practitioner or specialist), may each contribute to their elucidation, and must, indeed, all join hands if the practical steps necessary to deal with them are to be intelligently and successfully taken. A careful reading of our report will enable these problems to be appreciated and will suggest solutions on some points which require immediate or very early attention.

It is not necessary to exaggerate in order to emphasize the importance of the matter. It is true, as was stated in the course of the discussion, that there are many causes of social delinquency other than mental defect, and that there are many aments of various types who are so happily placed with regard to their environment that they do not behave antisocially to any greater extent than does the normal person. It may be true also that the present state of the law is relatively satisfactory in this regard, and that with some minor amendments it could be made adequate to allow of the situation being dealt with as far as the necessities of the immediate future can be foreseen. Knowledge and vision are, however, lacking. Scientific inquiry, social realization, administrative zeal, financial provision, lag behind the needs. A very small monetary help would allow certain profitable lines of research to be carried further. A wider missionary effort by those who themselves appreciate it would bring home the reality and importance of the question to our public men and to the public generally. In this the medical profession has a special duty. Such knowledge would stimulate administrative action, now almost wholly in abeyance over large parts of the country, and would enable the economist to see that to save money one year by neglecting mentally defective children is to spend fourfold a few years later on the consequences of this neglect.

The problem presented to society by mentally defective persons is three-fold: first, so to deal with them as to make their individual lives as healthy, happy, and full as may be; second, to protect the community as far as possible from the economic, social, and hygienic consequences of their almost inevitable failure to meet the conditions of life; third, to prevent them from becoming progenitors of like-minded descendants. Since modern society will not permit the extermination of even idiots and imbeciles, much less of high-grade morons, it owes them all that care and help which are required to give them safe and tolerable lives. The conditions for this will usually best be found in institutions or colonies. The great majority of defectives are, in fact, much happier in suitable institutions, associating with their mental equals and having a congenial occupation, than in the midst of the difficulties of the outside world, to which they feel themselves unequal. Sentimentalism with regard to the "liberty" of such individuals is out of accord with the facts. As was well said at Portsmouth, too, "We must think not only of the individual but also of the family group, and in many cases the social efficiency of those who have to live with an abnormal personality and adjust to his or her whims is diminished by at the very least 25 per cent." There is in all classes of homes "the waste of the efficient in the care of the absolutely inefficient." The sufficient provision of proper institutions and colonies is also a duty which society owes to itself. In them a proportion of the inmates become to some extent economically helpful or even self-supporting. The economic dead-weight on society is lessened; an appreciable proportion of the inebriety, prostitution, pauperism, and crime into which these defectives so often drift is prevented; and the spread of disease by means of dirty inefficient homes and of venereal infection is certainly diminished. Such a method helps society also to discharge its duty to posterity. The fecundity of the mentally defective appears to be much greater than that of the normal population, and the offspring are exceedingly likely to be themselves mentally defective. Though it is now agreed that mentally defective persons are not alone the procreators of mentally defeective children, it is obvious that the segregation of such persons during the reproductive age would tend materially to lessen the inferior stock in succeeding generations. If some means are not adopted in this direction the problem becomes more formidable the longer it is left.

The case for sterilization as an alternative to segregation was presented at Portsmouth, and, as will be seen from our report, it received full attention. The conclusion seems to be that, however applicable sterilization may be to some individual cases, as a public policy and routine practice it is unenforceable and has no advantage over adequate segregation. This subject is admirably stated in a small pamphlet entitled "Sterilization and Mental Deficiency," which has been sent to us by the Central Association for Mental Welfare, 24, Buckingham Palace Road. It contains a considered statement by the Medical Committee of that association, and is well worth the attention of the profession.

Nevertheless, even with increased institutional provision of the kind required, it is inevitable that some aments of all types, and relatively large numbers of those with the higher grade of feeble-mindedness, will continue to live in the general community. For these some degree of supervision in a selected environment is essential, and for a modest success even in these conditions previous training in a special school is necessary. It is becoming increasingly evident, and should now be recognized by all those concerned, that the main business of the special school is to deal with those high-graded morons who may be reasonably expected to achieve such moderate success. On them the money is well spent; by them the laborious care may be repaid; whereas the considerable expenditure entailed is wasted on other types, and is diverted from channels in which it could be put to much more profitable use. Such lower types would not be neglected but could be dealt with in other less costly and more appropriate ways.

Apart from the questions of heredity, of diagnosis and classification, and of clinical treatment, in which they are naturally interested, there are at any rate two ways in which members of the medical profession may give immediate and practical administrative help. Certifying medical officers vary in their knowledge of mental deficiency and in their idea of the sphere of the special school. If such officers would adopt a relatively high standard, and as far as possible a uniform standard, of "educability" for admission to, or for continuance in, the special school it would allow of the school places, which are far below the number required, being put to the best possible use. There are difficulties in the definition given in the Act and in the form of certificate, but a wise officer can overcome these. Again, medical officers could themselves supply much of the co-operation which is lacking between the various authorities concerned in one way or another with mentally deficient children or persons. The object is to secure unity and continuity of control of the mentally deficient with a view to the prevention of personal degradation and disaster to the individual defective and of the attendant social evils. In each county and county borough there is a statutory committee for the care of defectives, and each of these has, or should have, its medical officer. Such committees cannot exercise care over defectives of whose existence they are unaware, and the discovery of defectives is left mainly to others. The Education Authorities have them in their schools or on their schedules, the Poor Law Authorities find them in their institutions, the Asylum Authorities find them in their mental hospitals, the Police Authorities find them in their courts and prisons. They are found also in inebriate and rescue homes. All these authorities or institutions have their medical officers, and if these officers would in every case, when a mentally defective person is leaving their care, communicate with the medical officer of the Statutory Committee into whose area he or she is going, a continuity of supervision and help would be secured in a large number of cases where it is now prevented by the difficulty of regulations, or by the lax or less direct methods of the authorities themselves. In all cases where more than supervision is required the necessary official steps could then be taken before it is too late. In these and in other ways the medical profession can render the most valuable help and can take its due share in the attempt to solve one of the most difficult and important problems of medical sociology, a problem the solution of which in the national interest is becoming more and more urgent day by day.

HERBALISTS AND HERBALISM.

THAT lively legislator Lieut.-Commander Kenworthy has added to his claims to distinction by fathering a bill in Parliament "to provide for the registration of medical herbalists." The bill appears to be a kind of parody of the Medical Acts, and in the unimaginable event of its passing into law the herbalists at present in business would become legally qualified. We learn from the schedule that there is a body called the National Association of Medical Herbalists of Great Britain, Limited, and the council of this association would form the majority of the proposed "General Medical Herbalist Council for England and Wales."

We have been apt to assume that herbalists were persons in humble circumstances whose obscure lives did not often come into the limelight of publicity, and who did little harm even if they did no good, but now and again a coroner's court lights up other aspects of their activity. For instance, at Croydon recently a boy who had been treated by one of them died of diphtheria five minutes after a doctor was called in. The herbalist, who said he had been in "practice" for fifteen years, and had previously been a bootmaker, gave evidence that he treated the boy for a common cold, and gave him something to make him perspire. It seems in this case a pity that the cobbler did not stick to his last. The report which we have seen does not tell us what sudorific herb was administered, nor how the ex-bootmaker obtained his knowledge of its virtues. Our fathers of old started from the assumption that a beneficent Providence provided all herbs for our good; every herb must, they argued, be good for some disease, and it remained only to discover the special property of each species. One way was to relate herbs with stars and to "look at the stars when a patient is ill," as Mr. Kipling has said in *Rewards and Fairies*, where in five stanzas he has given an epitome of the history of therapeutics. But, as is to be read in that poem—

> Wonderful little, when all is said,
> Wonderful little our fathers knew . . .
> Whence enormous and manifold
> Errors were made by our fathers of old.

The epitome would have been more complete had the doctrine of signatures been included, but the omission may be excused on the ground that the doctrine is not very ancient when compared with the age-long belief in the therapeutic value of herbs. It appears to have been first promulgated in the sixteenth century by that extraordinary man Philippus Aureolus Theophrastus Bombastus of Hohenheim, who called himself Paracelsus and enriched the English and other languages by adding to them, unintentionally, the word "bombast." Although he was a doctor and a professor at Basle, who made great advances in chemistry and therapeutics, yet he was a very notorious quack. The doctrine of signatures may be stated in the words of Robert Turner, who wrote: "God hath imprinted upon the Plants, Herbs, and Flowers, as it were in Hieroglyphicks, the very signature of their Vertues." The doctrine of signatures professed to do this by finding either resemblances between the plant and the part of the body affected or between the plant and the cause of the disease. Thus, a plant with heart-shaped leaves is good for heart disease; the plant known from the shape of its leaves as the adder's tongue will cure the bite of an adder. William Cole, a Fellow of New College, Oxford, and a resident of Putney, carried this doctrine to great lengths. We owe to Mrs. Arber's book on herbals the following quotation from Cole, in which a most elaborate application of the doctrine occurs: "*Wall-nuts* have the perfect signature of the Head: The outer husk or green Covering, represent the *Pericranium*, or outward skin of the skull; whereon the hair groweth, and therefore salt made of those husks or barks, are exceeding good for wounds in the head. The inner woody shell hath the Signature of the Skull, and the little yellow skin, or Peel, that covereth the Kernell of the hard *Meninga* and *Pia-mater*, which are the thin scarfes that envelope the brain. The *Kernel* hath the very figure of the Brain, and therefore it is very profitable for the Brain and resists poysons; for if the Kernel be bruised, and moystened with the quintessence of Wine, and laid upon the Crown of the Head it comforts the brain and head mightily."

According to an article by Mr. L. F. Ramsey, published recently in the *Morning Post*, some herbalists

are still believers in the doctrine of signatures. He relates many instances given to him by a village herbalist, who said, for instance, that pine-cone gargle was good for toothache because the scales of the cone resemble teeth. At the end of the interview, however, the herbalist seems to have given himself away by claiming "wonderful cures, if they have faith." But Mr. Kipling will not let us off altogether. He seems to regret that we have not the simple and courageous faith of our fathers, exclaiming—

> We are afflicted by what we can prove,
> We are distracted by what we know.

Perhaps the modern herbalist does little positive harm, although, as in the Croydon case, by preventing prompt treatment he may be the indirect cause of harm. There is no evidence that he employs deadly plants, of which there are not a few in this country, for criminal purposes. We should almost be sorry if he and his stock of dried plants disappeared from the humbler walks of life in which he moves, whether his disappearance came by suppression or by evolution into Membership of the College of Herbalists proposed to be established under the egregious lieutenant-commander's Act.

THE PARLIAMENTARY SESSION.

THE parliamentary session, which began on February 13th and on August 2nd was adjourned to November 13th, has been more important than eventful. Apart from the anxieties attendant on foreign affairs, its proceedings have lacked striking interest, for no large measures of far-reaching change were introduced. But after-war conditions have continued to place grave responsibility upon administration and have made demands for legislation which, although unheroic, has had to be framed with much care and considered with deliberation. This remark applies especially to such matters as unemployment, housing, and agriculture.

All these subjects concern medical men, but for the most part indirectly. As to the first named, some credit may fairly be assigned to the Ministry of Health and its forerunner—the Local Government Board—that the physical condition of children does not appear to have suffered in the industrial depression. In regard to housing, the scheme which Mr. Chamberlain formulated and carried through was rather useful than grandiose; it was conceived with the object of encouraging local authorities, by the aid of money voted by Parliament, to erect dwellings economically in limited number where most needed, and of helping rather than hindering private enterprise—the lesson of harm from heavy subsidies in tending to raise expense having been learned. A wise precaution has been the establishment of a committee to watch the rise in the cost of material. In reference to rent restriction, Mr. Chamberlain, threatened by agitation on all sides, steered a middle course, to maintain until 1925 the existing restriction subject to modification, which should be useful in opening up property for occupation. By another neat adjustment the Minister extricated landlords in Glasgow, and in some other parts of Scotland, from the "no rents" entanglement. To meet the conditions of agriculture the Government has reduced the proportion of rates to be paid and, in another measure has authorized the setting up of agricultural credit societies and the grant of loans in certain cases to meet the exigencies of farmers holding heavily mortgaged land. In all these matters whatever desires the Government may have had were necessarily limited by the financial circumstances of the country. Thus again a middle policy was pursued in the Budget, a reduction of sixpence being made in the Income Tax and a substantial sum allocated to lighten, in a small degree, the National Debt.

Mr. Neville Chamberlain became Minister of Health early in the session, and much of his time was occupied with matters not immediately connected with health. But our record of questions and answers will have been sufficient to show how wide has been his survey and how sedulous his administration of the various services. His speech on the principal vote made clear that although the estimate was brought down he had taken care in dealing with the Treasury that economy should not be carried to the point of diminishing the services themselves. He claimed that the efficiency of the different agencies, such as maternity and child welfare, would not be impaired. The improved figures of mortality he was able to present in several respects will not, it is evident, tend to any slackening of effort. On the contrary, Mr. Chamberlain referred to some matters of detail to be dealt with shortly; he alluded, for instance, to the increase in the number of deaths which occurred in London from diseases of the respiratory organs after a fog, and said that he was framing a more stringent smoke abatement measure, since introduced in the Lords.

The small-pox outbreak was taken in hand very seriously by the Ministry. Mr. Chamberlain in his answers to questions has demonstrated that he is thoroughly alive to the danger. He pronounced himself unequivocally for vaccination, and he has recently taken a step which may determine the balance in favour of vaccination for a good percentage of children. Hitherto there has been issued with registration certificates a form to facilitate conscientious objection. In future, parents will be required either to obtain a form from the vaccination officer or to make a declaration in similar terms. It should be added that in the frequent references to Health Insurance across the floor of the House, Mr. Chamberlain has, as the lawyers say, shown himself fully "seized of the subject."

There is no need to dwell upon the continued responsibilities pertaining to the Pensions Department. They are being gradually reduced by final awards, but Major Tryon's annual statement must have struck the imagination of the public by making plain the vastness of the medical and surgical work still carried on. One departure of the year is the establishment of a small mental hospital exclusively for ex-service men. Major Tryon has frequently rebutted the utterly unwarranted insinuation that medical boards have sought to reduce allowances. He has given facts and figures to prove that, on the contrary, the reductions have been slight in comparison with the gains in health under treatment, and that the assessment of patients suffering a set-back have been revised accordingly. His fine tribute to the medical profession in its application of science to the relief and cure of those broken by the great war has been greatly appreciated.

The passage of the Dangerous Drugs (Amendment) Bill was made smooth by Mr. Bridgeman in consultation with the Medical Committee acting in conjunction with the British Medical Association. The measure imposes drastic maximum penalties for offences, and at the same time avoids interference with doctors requiring such drugs, either in emergency

or in the ordinary course of treatment. Mr. Bridgeman acknowledged his indebtedness to the profession for its good counsel, and the bill went through Committee practically as an agreed measure. Being now Home Secretary, he no longer has responsibility for seeing what can be done to minimize disease and accident amongst miners, but Colonel Lane-Fox, who has become Minister of Mines, is encouraging the same policy of investigation and research.

The adjournment, of course, leaves a variety of matters for consideration in the autumn session. Amongst these is the Mental Treatment Bill, happily through all its stages in the Upper House and ready to be taken in the Commons. Its object is to enable persons at an early stage of mental disorder to submit themselves voluntarily to treatment for a limited period.

The lamented illness of Mr. Bonar Law brought Mr. Baldwin to the Premiership early in the session. It is agreed that he has established himself not only as the leader of a party but as a Leader of the House. In him are combined the qualifications of a business man and of a lover of literature and the arts. His speeches have thus had a particular fascination on account of their accuracy in detailed statement of facts, and their literary form. It is too soon yet to judge the strength of the new Premier, but it may be said without hesitation that he has won the good-will of all sections of the House.

Any attempt to estimate the part taken by private members in the work of the session is impracticable in the short space available here. But the House generally has recognized the great value of what has been done quietly, actively, and unostentatiously by members of the Medical Parliamentary Committee, of which Dr. F. E. Fremantle is chairman.

SIR HAVELOCK CHARLES.

MAJOR-GENERAL SIR RICHARD HAVELOCK CHARLES, G.C.V.O., K.C.S.I., has vacated office as President of the India Office Medical Board and Medical Adviser to the Secretary of State in Council, and has been succeeded by Major-General J. B. Smith, C.B.E., C.I.E., I.M.S. (ret.). He will be succeeded as representative of the Government of India on the Permanent Committee of the International Bureau of Public Health by Major-General Sir W. R. Edwards, K.C.B., K.C.I.E., C.M.G., lately Director-General I.M.S. Viscount Peel has expressed his appreciation of the distinguished services Sir Havelock Charles has rendered to India during his tenure of these appointments, and has conveyed his thanks as Secretary of State in Council for the manner in which Sir Havelock has discharged duties, that during the war were particularly important and arduous. How arduous in certain respects these duties have been is well known to members of the British Medical Association. During the last ten years or more the Indian Medical Service has passed through a very trying period, and in every difficulty and emergency Sir Havelock Charles has shown himself its true friend. The early difficulties were in the main due to the dilatoriness of the Government of India in dealing with the situation produced by the change in the financial prospects of officers of the Service. When, owing mainly to the persistent representations made by Sir Havelock Charles to the India Office, the Indian Government at length tackled the matter, the war raised new difficulties and imposed fresh responsibilities. The prospects of the Service have also been seriously and permanently affected by the constitutional reforms recently introduced. The discussions which preceded their adoption very plainly indicated the direction they would take, so that their effect in checking recruiting in this country was obvious some years ago. But, the policy having been adopted by Parliament, there was nothing to be done. Finally, the report of the Retrenchment Committee dealt a further blow to the Service, and although the Government of India has been dissuaded from abolishing the appointment of Director of Public Health, the research grants have been greatly reduced. We have said sufficient to show that Sir Havelock Charles during his term of service has had no bed of roses. In spite of the fact that on many occasions he has had to take a course not always agreeable to the authorities, the honesty and sincerity of his services have been appreciated; he received the K.C.S.I. at the beginning of this year, and the *Gazette* now announces that he has been granted the honorary rank of Major-General.

TRANSFER OF THE SPECIAL SURGICAL HOSPITAL, SHEPHERD'S BUSH, TO ROEHAMPTON.

WE observe, from an incidental mention in an account sent to us of the work done at the Queen Mary's Convalescent Auxiliary Hospitals, Roehampton, between 1915 and 1923, that the Special Surgical Hospital, Shepherd's Bush, is to be closed at the end of this year, and that from 500 to 600 general medical and surgical cases are then to be transferred to Roehampton. It is pointed out that this will necessitate a large capital expenditure for the alteration of existing huts and the erection of new semi-permanent wards, operating theatres, etc. It will be remembered that last year (JOURNAL, April 1st, 1922, p. 530) a dispute arose between the Ministry of Pensions and the Hammersmith Guardians (from whom the special hospital at Shepherd's Bush is rented by the Ministry), and after the Ministry had suggested removing the patients under its care at Shepherd's Bush to huts in Richmond Park, an agreement to prolong the tenancy was happily arrived at. It seems evident that the tenancy of the hospital at Shepherd's Bush, which was formerly a Poor Law infirmary, must sooner or later come to an end. In 1921 (the figures for 1922 are not available) nearly 4,000 officers and men were under treatment at the hospital, nearly 2,500 operations were performed, and there was a total of over 101,000 out-patient attendances. An elaborate equipment of baths, gymnasiums, workshops, and departments for electrical treatment and massage has been built up at Shepherd's Bush, and this it is proposed eventually to transfer to the grounds which are available at Roehampton. It is, however, to be remembered that a large out-patient department, fully equipped for the different forms of special treatment, is needed. It can hardly be suggested that Roehampton is a place easily accessible from other parts of the London area, and apparently this problem still requires consideration. The report of the work at Roehampton goes on to say that it is hoped further to extend the benefits of the hospital there to a limited number of railway employees and others who have had the misfortune to lose their limbs in the course of their employment, and the committee hopes for financial support by donations and by the endowment of beds. Apparently the intention is to place the hospital at Roehampton on a permanent basis and to extend its facilities to the general public. This intention in regard to a Ministry of Pensions hospital, which was organized on a temporary basis for the reparative treatment of mutilated soldiers, will be observed with interest.

A GOOD EXAMPLE.

THE Board of Management of the Hospital for Sick Children, Great Ormond Street, has decided to establish a research department, and also to appoint a biochemist.

It was estimated that £2,000 a year would be required, and it was found that the financial position of the hospital would not warrant the expenditure. The Board made an appeal for financial help to commence the work to the directors of the Prudential Assurance Company, basing it upon the facts that the proposed research work would undoubtedly promote longevity and the development of a healthier and more virile race, and was thus of distinct value to a great assurance company. As a result, the directors of the Prudential Company agreed to provide the money required for the first year. This, so far as we are aware, is the first occasion on which an insurance company in this country has contributed to the cost of investigations which, if we regard the matter merely from a financial point of view, nearly touch its interests. We shall not be far wrong if we say that the trend of much of the observation and research in medicine during the last decade has been to show that the seeds of much disease in later life and premature death in the working years are sown in childhood. If we can keep away the man with the tares we may look forward to a better expectation of life in the future.

THE ROCKEFELLER FOUNDATION.

THE review of the world-wide activities of the Rockefeller Foundation during 1922[1] by its President, Mr. George E. Vincent, is of special interest because it contains a summary of the work done in its first decade. The Foundation was incorporated on May 14th, 1913, under a special charter granted by the State of New York and with an initial endowment of one hundred million dollars by Mr. John D. Rockefeller. During the last ten years this Foundation has received no less than one hundred and eighty-two million dollars from Mr. Rockefeller, has expended 76,800,000 dollars, and has pledged its future income to the extent of 15,600,000 dollars. A few weeks after the establishment of the foundation the Rockefeller Sanitary Commission, which since 1910 had been fighting hookworm disease in the Southern States, was reorganized as the International Health Board, and became a department of the Rockefeller Foundation. In 1914 the China Medical Board was created to further medical education in the new Oriental Republic; and in 1919 a Division of Medical Education was set up. By means of these agencies the Foundation has during its first ten years co-operated, chiefly in public health projects and the improvement of medical education, with the governments and institutions of sixty countries. In accordance with the object of the Foundation—the prevention of disease—for which an efficient general medical education is essential, the trustees have concentrated attention upon the closely related subjects of public health and medical education. During the war the Foundation spent nearly twenty-two and a half million dollars on various forms of activity—beneficent and in the interests of research; for example, the Public Health Service efficiently protected from malaria 43 areas in the vicinity of army camps in 15 States. The international exchange of information between workers was interrupted by the war and to restore this commerce in ideas to something like its normal state the Foundation is taking a vigorous share by distributing medical periodicals in Europe. A summary of the development of modern medicine is followed by copiously illustrated descriptions of what the Foundation is doing for medical education and for public health. Two million dollars have been allotted to provide a site, building, and equipment for the School of Hygiene near the British Museum, which our Government has undertaken to maintain; similar institutions at Baltimore, Harvard, Prague, Warsaw, and in Brazil have been assisted in recent years. No reader of this report can fail to be impressed and indeed to feel whole-hearted admiration for the manner in which the trustees are carrying out the Foundation's purpose of "promoting the well-being of mankind throughout the world." In conclusion it may be mentioned that the annual report of the Foundation, to be issued later, will be sent in due course to libraries and that other institutions or individuals may receive a copy on application.

[1] *The Rockefeller Foundation: A Review for 1922; A Summary for the First Decade.* By George E. Vincent, President of the Foundation, New York, 1923. (Pp. 59; 28 illustrations.)

VITAL STATISTICS OF NON-NATIVE OFFICERS IN WEST AFRICA.

THE vital statistics for 1922 of non-native officers in West Africa show a relatively favourable record.[1] The average personnel of the services through the year was 3,220, and the total number of deaths 26, or 8.0 per 1,000; the average length of service at death was six and a half years, which is only six months short of the seven years required for pension. This death rate shows a decrease of 33.3 per cent. on that recorded for last year, and constitutes a record. It is worth noting that it compares not unfavourably with the rate of 6.8 per 1,000 obtaining in East Africa in 1920, the last year for which East African records are available. The improvement is mainly due to a reduction of 50 per cent. in the rate for the Gold Coast. The rate of invaliding is less favourable: 67 officers, or 20.8 per 1,000, were invalided, after an average service of 7.66 years, as against 16.6 per 1,000 in 1921, whilst 32 out of a total of 76 officers pensioned were pensioned on account of ill health. The corresponding number for 1921 was 21 out of a total of 62. Of the total deaths 5, and of the invalidings 18, are recorded in the age group with the central age of 35, the highest combined figure in other age groups being 6 deaths and 15 invalidings in the group with the central age of 50. The greatest total number of deaths for one group is 7, with the central age of 40, but the high mortality is balanced in this case by a lower invaliding rate. It is suggested in the remarks on these statistics that the figures indicate that the longer tours of service under the new regulations, which have been in force throughout the year, are not having any adverse effect on the general standard of health of Government officers in West Africa; but it must be remembered that the longer tour of service might well produce a more immediate effect upon the invaliding rate than upon the death rate, and it seems premature to advance any opinion upon this point.

[1] *West Africa: Vital Statistics of Non-Native Officials in West Africa: Returns for 1922.* Published by the Crown Agents for the Colonies, 4, Millbank, London, S.W.1. Price 6d.

PREVENTION OF DENTAL CARIES.

FROM the Society of Medical Officers of Health we have received a copy of a leaflet for the use of parents entitled *Prevention of Decay of Teeth*. It is concise and clearly worded; and the instructions are such as can be carried out in daily life. Perhaps stale bread might be advised in place of "crisp toast" or "twice-baked bread," and we may be allowed to point out a misprint—"delay" for "decay." The point, however, we have in mind is that we have seen several such leaflets, and doubtless there are many others we have not seen, issued by different bodies; the substance of all is very much the same, yet in detail and in diction they differ considerably. The daily hygiene of the teeth is an important matter, and we suggest that greater weight would attach to these leaflets if all bodies interested in such propaganda issued one and the same set of instructions.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

PUBLIC HEALTH MATTERS.

Hospitals and Poor Law Infirmaries: The Spahlinger Treatment.

ON the Appropriation Bill, on August 1st, Mr. Rhys Davies referred to the limited hospital accommodation and to the fact that there were in the Poor Law infirmaries of the country 30,000 empty beds, while not very many short of 100,000 people were waiting for admission to the beds of ordinary hospitals. In the case of one hospital in London at that time, there were 300 persons on the waiting list for 15 beds, an average of 20 for a single bed. He next touched upon the position at Gloucester, mentioning that employers had given notice of dismissal to those of their staffs who were unwilling to be vaccinated. He complained bitterly that such a course should be tolerated. Mr. Davies then alluded to the appeal made to the Minister by a deputation from the Lancashire Insurance Committee, suggesting that an arrangement should be made between the Ministry of Health and M. Spahlinger in regard to the use of his method of treating consumptives. He understood that the Minister of Health did not see his way financially to back a proposal which would allow of separate institutional treatment on these lines for 40 or 50 patients. The Lancashire Insurance Committee had asked to be allowed to spend part of its money in trying to secure this treatment for Lancashire patients.

Lieut.-Colonel Hodge asked the Minister to reconsider his decision. M. Spahlinger had, he said, obtained cures in 80 per cent. of the cases treated under his system. But he was not a good financier, and was in debt to the amount of £100,000 on account of the work he had done. The undertaking might be commercialized, but M. Spahlinger knew that if his method were dealt with in that manner the possibility of obtaining a cure for poor people would be minimized seriously. If the sum of £100,000 were provided those who furnished it might secure the inventor's laboratory, the whole of his estate and his father's estate. These properties would be handed over for a period of ten years. M. Spahlinger also needed money to continue his research. He asked for £10,000. He was willing that a committee should be appointed to record how the money would be spent. His wife, who acted as his secretary, and his father, mother, and sister were dependent upon him. All he sought was £2,000 a year for joint maintenance. The question was whether the Minister would find £100,000 and a subsidy of £10,000 a year for three years, with a possibility that a cure for tuberculosis would be provided. For such financial aid M. Spahlinger would give 50 per cent. of his serum and vaccine. The Minister had expressed his sympathy, but had said that he could not advise the Ministry to liquidate the debts, nor could he advise nor allow the Lancashire Insurance Committee or any other insurance committee to spend money in this way. The answer to that surely was that it was a case for courage. He asked the Minister to send out a man to Geneva to ascertain the facts and make the best possible arrangements.

Ministerial Reply.

Lord Eustace Percy, replying for the Government, dealt first with the assertion that while hospitals could not provide for the sick there were 30,000 empty beds in Poor Law infirmaries. The figure was quite incorrect, for it represented the highest number at the slackest season of the year, and covered a class of institutions broader than were commonly classed as Poor Law infirmaries. The actual number of empty beds in these on January 1st was just over 6,000, or about 18 per cent., and steps were being taken for a better utilization of the space in such infirmaries. He begged to be excused from entering into a discussion on the action of certain employers in Gloucester. All he could say was that if he were in Gloucester he should certainly claim the right to protect his household from what he should consider was a risk, and to do this by refusing to take into his private employment any person not vaccinated. He should regard it as a rather gross form of tyranny if the State were to tell him he was not at liberty to do so. To what extent that principle was applicable to various forms of business or industry he would not discuss at the moment. It was not quite true that no grant was given by local authorities for extra nourishment to persons suffering from tuberculosis. There was a grant in certain cases and in certain areas. It was true there was no grant given for bedding, but he protested against the assumption that it was outside the power of local authorities to take on any new activities for the prevention or cure of disease unless they had a grant from the central Government. Coming next to the question as to the Spahlinger treatment, Lord E. Percy said it was not for want of knowledge of the interest throughout the country and the distressing need there was for an adequate and efficient cure for tuberculosis that the Ministry did not yield to the request. Nor was it because it was afraid to spend the money. M. Spahlinger had received every consideration at the hands, not only of Mr. Chamberlain, but of his predecessor, Sir Alfred Mond. Last year the Ministry sent out to Switzerland a specially qualified officer to acquaint himself with the methods, and on this officer's report the Ministry, in August, 1922, made a proposal to M. Spahlinger, which that gentleman, though unable to accept it, said he would have been very glad to accept under normal conditions. Arrangements between M. Spahlinger and the Red Cross Society also fell through. The position of the Government in this matter now was quite simple. They were interested in what was commonly known as the Spahlinger treatment. They were satisfied that there was a *prima facie* case for such further scientific inquiry as would enable medical authorities and the world at large to form a definite and final opinion as to its efficiency. But, if there was to be any question of the expenditure of public funds, Parliamentary sanction for such expenditure would be necessary, and the Government would not be justified in coming to Parliament to ask for such sanction except on the basis of adequate information and reasonable security. In the opinion of Mr. Chamberlain these conditions would best be satisfied by asking M. Spahlinger to take an early opportunity of making a full statement of his process and result to a body competent to pass expert opinion upon it. Such an opportunity was being afforded, and when M. Spahlinger had taken advantage of it they could arrive at a decision as to what action, if any, could be taken by the Government. Meanwhile, Mr. Chamberlain hoped that the appeal which he understood was now being made for funds from private sources might be successful in meeting the immediate difficulties of M. Spahlinger's position. The country might feel assured that the Ministry was watching this question with very great interest and would do everything in its power to give that assistance which trustees of the public funds could give in such cases.

Small-pox and Vaccination.

On the request of Mr. Bromfield, the Minister of Health, on July 31st, gave the following statistics as to percentages of small-pox cases in England and Wales for different age periods:

Small-pox—England and Wales.

Year.	No. of Cases.	No. of Deaths.	Mortality per Cent. of Cases.	Percentage of Total Cases at Age Periods.				
				1–15	15–30	30–40	40–50	50 and upwards
1918	63	2	3.2	31.8	23.8	23.8	6.3	14.3
1919*	311	28	9.0	17.7	29.6	17.4	18.6	15.8
1920	280	30	10.7	33.6	23.6	12.5	19.6	10.7
1921	336	5	1.5	47.0	20.6	8.9	10.7	12.8
1922	973	27	2.8	47.6	22.1	7.9	10.7	11.7
1923 (January—June inclusive)	1,227†			Information not yet available.				

* No information received as to age of three cases in 1919.
† Subject to revision.

The Minister has also supplied the following particulars of deaths from small-pox in Berlin and Paris:

Small-pox in Berlin and Paris, 1913–1922.

	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.
Berlin:										
Cases ...	4	8	26	3	288	1	22	7	1	0
Deaths ...	0	0	1	0	39	0	6	*	*	0
Paris:										
Cases ...	33	39	4	2	3	53	132	11	8	4
Deaths ...	1	3	0	1	0	20	32	1	1	1

* Figures not yet available.

Mr. Leach asked, on August 1st, whether the Minister of Health had any official information that it was the practice in the United States to carry out vaccination by means of a single insertion only, and that this method was as protective against small-pox as the official four-marks method adopted in this country. Mr. Chamberlain said he had no official information as to American methods. The Royal Commission on Vaccination concluded that vaccination in four places, giving a total vaccination area of half of a square inch, was more effectual and gave better protection against small-pox than was afforded by one place or a less vaccinated area. Mr. Leach asked whether it was the practice in the United States to defer vaccination until children entered the public schools at about the age of 5 years; and whether the incidence of small-pox there in the case of children under 5 was any greater than during that age period in other countries, such as

Germany, where infant vaccination was well observed. Mr. Chamberlain said he had no definite information as to American practice, but he understood that in most of the States which enforced vaccination the law provided that every child must present a certificate of successful vaccination before admission to school. He had no information which would enable the comparison suggested, but the American statistics showed that in those States where vaccination was enforced before admission to school the incidence of small-pox in the community generally was markedly lower than in those in which vaccination was not compulsory.

In reply to Mr. Paling, Mr. Chamberlain said that the number of cases of small-pox which had occurred in England and Wales during the eighteen months ended June 30th was 2,200, of which 27 cases were fatal. The number of cases in South Yorkshire during the same period was 423, with one death. The figures included in these statistics for the first six months of the present year were subject to revision. The new Order as to statutory declaration was that from and after September 1st any parent wishing to make a statutory declaration of conscientious objection to vaccination might obtain a form of declaration from the vaccination officer, or might make a declaration in the form prescribed by the Vaccination Act, 1907, or in a form to the like effect. This arrangement superseded the provision of a copy of the usual objection form with birth registration form.

Mr. Chamberlain stated, on August 2nd, that he had not complete information as to the vaccination law throughout the United States. But he was advised provisionally that the States in which there was no penalty for neglecting vaccination were Illinois (excluding Chicago), Kansas, Minnesota, Ohio, Michigan, Alabama, Vermont. There was exemption on account of conscientious objection in California. The States in which penalties were imposed for neglect of vaccination included New York, New Jersey, Connecticut, Maryland, District of Columbia, South Carolina, Louisiana, Virginia, Wisconsin, Mississippi, Indiana, Washington, North Dakota, Texas, Iowa, Arkansas, Massachusetts, Pennsylvania.

Some remarkable figures as to vaccination in the registration districts of Liverpool, Toxteth Park and West Derby taken collectively, have been given by Mr. Chamberlain. They dealt with a period of twenty years, and showed that resort to vaccination had been much more extensive in those areas than was generally the case in the country, though there had been a large decline in the years 1915, 1916, 1917, 1918, and 1919. In the year 1920, during which there were 28,982 births, the number of vaccinations was 20,853, the number of exemptions 2,289, and 1,520 cases were postponed. In the year 1921, when the number of births was 25,390, the number of vaccinations was 18,283, the number of exemptions 2,175, and the number of postponements 1,061.

Chicken-pox in Birmingham.—Lord E. Percy informed Mr. Leach, on August 2nd, that under the provisions of local Acts in force in Birmingham the parent or guardian of a child at school was required to notify the head master if chicken-pox occurred in any member of the family. The number of cases notified under these provisions during the eight weeks ended July 28th was 623, while three cases of small-pox were notified to the medical officer at the same period.

Tuberculosis: Village Settlements.—Mr. Baldwin announced, on August 2nd, in answer to Mr. Pease, that the Minister of Health and the Minister of Pensions had investigated the work of the two village settlements started in this country for the benefit of tuberculous persons. They were satisfied that much useful work had been accompl shed, but as these settlements were still in the experimental stage it was too early to say whether they would be permanently successful. In the circumstances the Government were of opinion that there was a good case for some financial assistance from the Exchequer for their extension, so as to provide additional accommodation and enable the experiment to be tried on a somewhat larger scale. When the House reassembled a supplementary estimate of £20,000 would be submitted for the purpose of grants to provide twenty-five additional cottages for ex-service men and their families at each of the settlements.

Tuberculosis in the Navy.—Major Boyd-Carpenter stated, on August 2nd, in answer to Lieut.-Colonel Moore-Brabazon, that no statistics of tuberculosis in the Navy were prepared for the year 1920, and none were yet available for 1922. The figures for 1921 were as follows:

Classes.	No. of Cases.	Ratio per 1,000 of average No. borne.
Commissioned officers	10	1.77
Warrant officers	2	0.69
Seamen	103	2.46
Boys	14	1.69
Engine room ratings	75	2.50
Marines	24	3.20
Stewards and cooks	5	1.33
Sick berth staff	6	4.27
Writers	8	8.77
Victualling ratings	3	4.49
Ships' cooks	3	1.71
Other artisans	3	0.83
Telegraphists	8	2.76

Mining Accidents and Disabilities.—On the vote for the Mines Department of the Board of Trade, on July 24th, Colonel Lane-Fox said that there had been a decrease in fatal and serious accidents during recent years. There had also been a decrease, especially in the last year or two, in cases of nystagmus. There had, however, been an increase in the number of slight accidents. The Miners' Welfare Fund, which was founded on the rate of a penny per ton on every ton of coal raised under the Mining Industry Act, was administered by a committee under Lord Chelmsford, and was proving very valuable. District schemes—the majority were for recreation—had been passed. There were 59 schemes dealing with health at a cost of £284,000. In Ayrshire one had been adopted for a convalescent home at the cost of £50,000. There were schemes also for medical and nursing services, and in some places for the development of pit-head baths, in regard to which we were very much behind every European country. Mr. Duffy Gavin raised the case of the iron ore miners. He quoted from Dr. Arlidge's work on diseases of occupation to show that iron mining caused severer bronchitis and asthma than coal mining and was a more unhealthy occupation. He urged that a separate inspector was required for Cumberland, and claimed that he was supported in this view by the report of the Royal Commission. He complained also that in one mine where dynamite was exploded in a comparatively contracted area men were forced to go in amongst the fumes with the result that there had been an excessive amount of illness. Mr. Robert Jones afterwards touched upon quarry work in Wales to say that the industry had been neglected by the Mines Department. In North Wales there was very little protection for people engaged near the crusher, and they came away as if they had just emerged from a flour sack. It was generally admitted that if the dust did not bring about phthisis it produced silicosis.

Mental Institutions.—Mr. Chamberlain, replying to a lengthy question of innuendo by Mr. R. Richardson, on August 1st, said he could find no evidence that the existing voluntary boarder system in mental institutions was open to abuse. He knew of no grounds for a further inquiry into its working. Mr. Rawlinson asked whether, in the cases of those patients who were received into private mental institutions in 1922 without being seen by a magistrate and without the provisions of Section 8 of the Lunacy Act, 1890, having been adhered to, such patients had since been discharged, or, if not, under what power they had respectively been detained. Mr. Chamberlain said he was advised that failure to comply fully with requirements of the Section mentioned did not invalidate the reception orders authorizing the detention of patients. Steps had been taken to remedy the defect as to the giving of notice. In reply to Mr. Ritson, Mr. Chamberlain said the Board of Control had suggested to authorities of all institutions receiving private patients the desirability of requesting patients to whom a notice under Subsection (2) of the Section had been given to acknowledge its receipt in writing. The authorities were further advised that if the signature of any such patient were unobtainable, the notice should be endorsed to that effect.

Prestwich Mental Hospital.—Major M. Wood asked, on August 1st, whether the Minister of Health had received any protest from the medical profession in Lancashire in regard to the appointment of the superintendent of Prestwich Asylum, Manchester. Mr. Chamberlain said that the Board of Control had received no official information of the appointment of a medical superintendent at Prestwich Mental Hospital; but understood that an appointment, to which strong exception was taken, was made last week by the Lancashire Asylums Board. The appointment rested with that body alone, but the Board of Control, in January last, suggested that it would be of advantage if it were consulted in regard to it. He did not know why this advice had not been acted upon, but the Board of Control proposed to make some inquiry about the appointment.

Inebriates' Institution, Langho.—In reply to Sir John Leigh on August 2nd, Mr. Chamberlain said that the Government grants for the inebriates' institution at Langho from April, 1904, to May, 1920, amounted to £59,524. At the date of the armistice there were 55 inmates, but during the year 1919 the average number was 32. The institution was now used for mental defectives by the Lancashire Asylums Board and was certified by the Board of Control. Some blocks were used for mental defectives in 1915 and since the spring of 1920 the whole of the institution had been so used. The total cost of maintaining defectives there since 1915 to March 31st in the present year was £87,378.

Grants for Combating Venereal Disease.—Mr. A. Bennett asked, on August 2nd, whether the Minister of Health would consider the allocation of the annual grant of £12,000 for combating venereal disease between the Society for the Prevention of Venereal Disease and the National Council for Combating Venereal Diseases; whether the Minister was aware that the latter organization was the only one in receipt of any State assistance; and why, seeing that the Trevethin report had been unconditionally accepted by both, any differentiation was made in Government assistance. Mr. Chamberlain replied that the maximum grant paid from the Ministry direct to voluntary organizations in aid of their work in combating these diseases was £7,500. He was aware that only one society received State assistance. The question of Government aid for the work of such organizations would come up for review in connexion with the recommendations in the Trevethin report which was now under consideration.

Deaths Under Anaesthetics.—Mr. Barnes asked Mr. Chamberlain whether he had seen that at an inquest on a person who died under an anaesthetic in Poplar Hospital the coroner said that that was the third inquiry he had held that day upon persons who had died after the administration of an anaesthetic, and expressed the opinion that further investigation was necessary. Mr. Chamberlain promised to make inquiry with a view to considering whether further action was needed.

Hospital Accommodation.—Mr. Rhys Davies asked, on July 25th, whether, in view of the fact that the voluntary hospitals of the country were crowded and subject to long waiting lists and that a large number of beds were unused in the Poor Law hospitals,

some steps could be taken to remove this state of things. Mr. Chamberlain did not think he could usefully undertake any general action, but would be glad to consider any proposals which might be put forward by boards of guardians and the authorities of hospitals for the general use of any surplus accommodation in Poor Law infirmaries.

Nurses' Registration.—Replying to Dr. Chapple, on July 25th, Mr. Chamberlain said he had not taken the advice of the law officers of the Crown upon the power of the General Nursing Council to exclude from the register existing nurses who, "being otherwise qualified," made application for admission within two years from the date on which the rule, made on July 7th, came into operation.

Oxford and Cambridge Universities.—On inquiry by Mr. Charles Buxton, on August 2nd, Sir W. Joynson-Hicks said he had requested the University Grants Committee to take such steps as appeared practicable to obtain from the University authorities at Oxford and Cambridge returns which would be as nearly comparable as circumstances permitted with those annually supplied by other grant-aided universities. The conditions at Oxford and Cambridge, however, differed materially from those at the other universities, and as the records and accounts had not hitherto been kept with a view to such returns being made a little time must elapse before they were available.

Insurance Medical Certificate Forms.—Mr. Neville Chamberlain, on July 30th, informed Sir Ellis Hume-Williams that he could not undertake to withdraw books of certificates on the back of which advertisements appeared; but the issue would be exhausted at an early date.

Therapeutic Substances Bill.—The Therapeutic Substances Bill, having passed all its stages in the Lords, was read a first time in the Commons on August 2nd.

Ministry of Pensions.

The number of service patients at present in county or borough asylums for whose treatment and maintenance the Ministry accepts responsibility is 5,800.

A number of the cases examined after the final award had been set aside by the tribunal had been found to have deteriorated and had consequently received further compensation.

Approximately 1,500,000 courses of treatment had been provided by the Pensions Ministry for officers and men who were disabled in the great war.

Apart from the general provision of Section 5 of the War Pensions Act, 1921, there is no time limit affecting a claim to compensation by a disabled man in respect of aneurysm.

There were only four pensioners under treatment at the orthopaedic clinic at Burnham-on-Crouch at the cost of the Ministry, but the clinic is under the control of the British Red Cross Society. The Minister could not deal with the question whether it could be made available to the other medical men in Burnham or utilized as a local hospital.

It is proposed to vacate the hospital premises at Neath in the autumn, when a suitable institution at Chepstow will be available. There are at present 169 in-patients and 78 out-patients.

The Minister of Pensions has stated that full consideration is given to opinions expressed by county and other tuberculosis officers and medical superintendents of sanatoriums with regard to the question whether the tuberculosis from which an ex-service man may be suffering is due to war service, but the decisions on the question of entitlement must rest with the Ministry, which had the advantage of the services of a sufficient number of medical men with expert knowledge of the disease to advise on this matter.

The report of the committee appointed to inquire into the cause of the fire at Highbury Pensions Hospital, Birmingham, will be published.

Answers in Brief.

Owing to the expense that would be incurred it is not proposed to publish the report of the Joint Committee set up by the Scottish Board of Health in 1920 to consider the relation of maternity benefit under the Insurance Act and the maternity and child welfare schemes of local authorities. The committee was composed of representatives from the consultative committee on local health administration and general health questions and of the consultative committee on national health insurance (approved societies' work).

The Minister of Health informed Sir Robert Newman there had not been an increase in deaths resulting from measles since the compulsory notification of that complaint had been abolished. The average number of deaths during the past three years had been 5,042 per annum, as compared with 7,318 per annum for the four years 1916–19 during which notification was compulsory.

The annual cost per head for the year ended March 31st, 1921, for England and Wales of the inmates of the several classes of Poor Law institutions was as follows: Homes for children, £73 18s. 7d.; Poor Law infirmaries and other Poor Law institutions for persons suffering from infirmity of body or mind, £148 12s. 1½d.; general Poor Law institutions, £78 14s. 7½d.; all classes of Poor Law institutions, £88 5s. 3½d.

Mr. Chamberlain has promised to consider a suggestion by Sir Charles Oman that in the draft order for casual paupers about to be issued, provision would be made for notices to be placed in casual wards advising that casuals should apply to see the doctor in cases of indisposition; and if unfit to travel should apply for admission to the workhouse.

The collection of information as to cancer areas in this country, or on the Continent, is receiving the attention of the Committee advising the Ministry of Health on cancer problems.

In reply to a question as to the death of a painter at West Norwood from lead poisoning, the Home Secretary said that the whole subject was receiving careful consideration, and he hoped soon to be in a position to announce the decision of the Government.

The Home Secretary has declined to introduce legislation to amend the law so as to give magistrates power to place inebriates upon the black list without their own consent.

The Home Secretary has stated that only one prison governor holds the necessary qualifications to act as a medical officer. No change in the present practice of making appointments was contemplated.

INTERNATIONAL PHYSIOLOGICAL CONGRESS.

(*Concluded from page 203.*)

THE eleventh International Physiological Congress held in Edinburgh under the presidency of Sir Edward Sharpey Schafer, Professor of Physiology in the University, came to an end on Friday, July 27th.

INHIBITION, HYPNOSIS, AND SLEEP.

Professor I. P. PAVLOV (Petrograd), who was present at the Congress, had prepared a lecture on the identity of inhibition, as a constant factor in the waking state, with hypnosis and sleep, which was read for him by his son.

In some introductory paragraphs Professor Pavlov said that the highest nervous activity of the dog had been studied by himself and his numerous collaborators for the last twenty years, and that the investigation had always been conducted on a purely physiological basis; psychological conceptions or words were never used. The highest nervous activity consisted of analysis and synthesis of the external and inner worlds—of stimuli which reached the cerebral hemispheres from without and from within. The so-called reflexes or instincts, the latter being complex reflexes, formed the chief basis of nervous activity. Reflexes were the inborn connexion between definite outside agencies and corresponding definite activities of the organism. This reflex activity was the function of the lowest parts of the central nervous system. During life temporary connexions were formed under special conditions in the cerebral hemispheres. To the inborn reflexes he applied the term "unconditioned reflexes"; those individually acquired he called "conditioned reflexes." If some external stimulus was made repeatedly to coincide with some inborn reflex it acquired the powers of producing the same reaction as the unconditioned reflex. For example, food produced a food reaction; the animal performed certain movements with respect to the food, and saliva and gastric juice were secreted. If the feeding of the animal coincided several times with a certain sound then this sound, previously entirely indifferent, evoked the same food reaction as the food itself. The amount of saliva secreted was a measure of the intensity of the reaction. A similar principle applied to the formation of conditioned reflexes in the case of any other agent of the external world and in the case of other instincts—for instance, self-protection or the sexual instinct. The great synthesis between the outer world and the organism was accomplished in this way. A conditioned stimulus, if not accompanied by the unconditioned, was temporarily suspended; for instance, if in the example already given the sounds were not accompanied by feeding the food reaction it had produced would be lost, but after several minutes, or in some cases hours, it returned. It appeared, therefore, that there was an inhibition, but not destruction, of the reflex. Any stimulus, after it had become a conditioned stimulus, was generalized—that is to say, the conditioned reaction was provoked not only by the specially chosen stimulus, but by any other of the same type. After this introduction Professor Pavlov continued with the main subject of his address, as follows:

As a result of many preliminary guesses and tests we arrived at the following thesis: the inhibition already referred to, and ordinary sleep and hypnosis also, are one and the same process. Every conditioned stimulus, as soon as it is used alone, without being accompanied by an unconditioned one, sooner or later always leads to a drowsy state, or to sleep. Some conditioned stimuli produce sleep in a shorter time than others. In a similar way some animals develop this property more easily than others. As a general rule, sleep is induced the more quickly the longer

the conditioned stimulus acts alone without being accompanied by an unconditioned one. For instance, we have in our laboratory a dog, which, if it has not been fed for about twenty hours, is always very hungry for food. After fifteen seconds the conditioned stimulus alone, before the actual feeding, invariably produced the feeding reaction, motor and secretory, and the dog always remained wide awake. If the interval between the application of the conditioned stimulus (in the absence of feeding) was made longer, say thirty seconds, after a few repetitions (3 to 5) the dog became drowsy and in the end fell so soundly asleep that he must be forcibly awakened to take food.

This fact may be most easily understood in the following way. The isolated, concentrated stimulation of cells of the hemispheres soon leads to their exhaustion and to sleep, if not accompanied with the stimulation of other cells. Normal sleep comes as a result of a general exhaustion of the cerebral hemispheres. In this particular instance the only point which is not quite clear concerns the manner of spread of the inactive state from the exhausted cells to those elements which have not been involved in the work. It may be assumed that the exhaustion of given cells leads in some way unknown to the formation of some substance or process which produces the inactive state of the exhausted cells and spreads to other cells which have not been fatigued. This sleep-inducing action of the conditioned stimuli under special conditions is paralleled by the well known fact that uniform and monotonous surroundings usually predispose to sleep in persons who are not tired. This state, which in the case of conditioned reflexes leads to sleep, is exactly the same as that which leads to the development of inhibition. When the conditioned is not accompanied by an unconditioned stimulus, it is gradually inhibited, as has already been pointed out. Further, whenever the inhibition is developed in a definite phase sleep usually follows, if special precautions are not taken. Finally, cases constantly occur in which either inhibition or sleep may develop, or inhibition may pass into sleep, or *vice versa*. All these facts led us to the conclusion that inhibition and sleep are identical processes.

But how is the fact to be explained, that inhibition is a constant and essential element of the active state of the hemispheres and sleep is their rest? The answer does not seem to be difficult. Inhibition is partial sleep, or sleep distributed in small parts, within narrow limits; sleep is diffused and continuous inhibition of the hemispheres.

The theory that the processes of inhibition and sleep spread over the area of the hemispheres can be verified by direct experiment. If we place on the skin of the animal a series of instruments, producing mechanical stimulation of the skin, and so arrange all these mechanical conditioned stimuli that the same quantity of saliva is secreted for each of them, we can differentiate one of these points at one end of the series. Using the procedure described we can make the corresponding stimulus inactive—that is to say, we produce inhibition in the corresponding point of the brain. Then by observing the effects which are produced at different intervals following the stimulation, we easily recognize that the inhibition from the initial point first radiates at a definite rate over the active points and afterwards concentrates itself in the initial point again. It is of great interest that this movement of the inhibitory process is very slow—it is measured in minutes. In our daily experience we encounter exactly the same fact concerning sleep, which gradually takes possession of the hemispheres and then after a certain period of time leaves them. Of no less interest is the fact that the rate of irradiation of the inhibitory process varies very widely among different animals. It may be ten times greater in one than another. Again we see the full analogy with the fact that different persons fall asleep and awake at different rates. I regard all the facts mentioned as proving conclusively the identity of inhibition and sleep.

From this point of view the phenomenon of hypnosis may easily be explained. It is a step in the process of radiation of inhibition over the mass of the hemispheres—the partial sleep of the hemispheres. We have frequently observed the following striking phenomenon in the dog. We produce inhibition by any method and give time for it to radiate till a stage is reached when a chosen conditioned stimulus still affects the secretory reaction—the saliva flows, but the animal does not take food which is offered to it. This means that inhibition has taken possession of the motor area of the hemispheres, but has not yet radiated to other parts of them, which are, for instance, in connexion with eyes and ears. This is an obvious analogy to a special phase of human hypnosis, when the hypnotized person hears and understands, but cannot make any voluntary motion. Thus the cerebral hemispheres in an active state show the enormous mosaic of the points stimulated and inhibited, or chronically sleeping; they are very close to each other and mixed up.

Hypnosis is inhibition spread over the usually active points in special areas of the great hemispheres. Sleep is inhibition radiated over the whole area of active points of the great hemispheres and even over some parts of the brain which lie below the great hemispheres. But even while the inhibition is widespread there still remain some isolated active points, watching, so to speak, and capable of being stimulated. We know this from daily life: a miller is awakened by the cessation of his mill, a mother is roused by movement of her sick child. Similar facts may be observed and artificially produced in dogs. The development of inhibition is to a great extent dependent upon practice. This may supply the foundation for a hygiene of inhibition in both active and sleeping states.

A question of the greatest importance is whether the highest nervous activity—that is to say, individual attainment—is hereditary. We have tried to find an answer to this question. We established the conditioned food reflex in white mice, using the sound of an electric bell. With the first set of wild white mice it was necessary to repeat the combination of ringing of the bell and feeding three hundred times in order to form a well established reflex. The next generation (second) formed the same reflex after one hundred repetitions. The third generation acquired this reflex after thirty repetitions, the fourth after ten, and the fifth after five only. The experiments had reached this point when I left Petrograd this summer. On the basis of these results I anticipate that one of the next generations of our mice will show the food reaction on hearing the sound of the electric bell for the first time. This result would be quite analogous to the well known fact that a chicken newly hatched immediately tries to pick up any small objects or spots which it sees on the floor. If the stimulation of an eye, as in this case, leads to the food reaction, why, then, may not the stimulation of the ear in the former case produce the same effect?

PAPERS AND DEMONSTRATIONS.

The following are notes of some of the papers and demonstrations which could not be reported in our last issue.

The Syndromes of Experimental Pituitary Derangements.

Dr. NORMAN M. DOTT (Edinburgh) said that he had produced various lesions of the hypophysis in the dog by using Paulesco's intracranial, subtemporal exposure of the organ. Total destruction in every instance in cats, and total excision in one dog, proved fatal within three to fourteen days. Death seemed due to abolition of the respiratory reflex mechanism. Two dogs survived, for more than a year, what appeared both grossly and microscopically to be total hypophysectomies. Lesions involving removal or degeneration of large portions of the anterior lobe were followed by a definite syndrome. The anterior lobe was remarkably tolerant of more limited resections, and at least one-half could be surgically removed with impunity. The function most readily disturbed was that of sexual activity. Thus one dog, with no external appearance of abnormality, had remained quite anaphrodisiac after resection of about two-thirds of his anterior lobe; and a bitch in similar circumstances had remained sterile. In well marked cases of deficiency from more extensive resections, growth was affected, and radiographic studies of the skeleton showed that it was greatly retarded or permanently arrested; the embryonic cells of the epiphyseal cartilages degenerated. The generative organs atrophied in both sexes; the germinal epithelium degenerated. The

metabolic rate was depressed from the first, as evidenced by subnormal temperature, lethargy, and adiposity. The thyroid gland showed an extreme (?) compensatory hyperplasia during the first ten days; this was followed by permanent hypoplasia.

Feeding with anterior lobe caused both in dogs and cats a moderate (average 25 per cent.) acceleration of growth, as mathematically determined by radiography of the skeleton. The temperature of these animals had averaged slightly higher than that of controls. Administration of the anterior lobe raised the subnormal temperature and relieved the lethargy. It did not influence the failure in growth, nor had it altered the histological appearances of the degenerated epiphyseal cartilages. Injections of extracts of the anterior lobe raised the subnormal temperature of thyroidectomized animals just as thyroid extract did; this indicated a possible independent metabolic activator from the anterior lobe of the pituitary body.

Total excisions of the posterior lobe had given rise to no observable consequences. One animal so treated appeared perfectly normal eighteen months after the operation and had two normal pregnancies and parturitions. Mechanical stimulation of the posterior lobe by operative manipulations had caused an extreme, evanescent polyuria. The polyuria following continued irritation by the contact of a platinum plate was still greater and of longer druation. The operations were conducted with care, and no interpeduncular cerebral lesion could be found *post mortem* by microscopical examination. The conclusion drawn was that the anterior lobe exerted an influence (probably independently of the thyroid) on the activity of the cells of the entire organism, and a special "trophic influence" upon cells of an embryonic type, such as were found in germinal epithelium in both the young and mature, and in the epiphyseal cartilages of the adolescent. In spite of the well known physiological effects of posterior lobe extract, extirpation of this portion of the organ gave no indication of its physiological action in terms of the consequences of its deficiency.

Circulation in the Spleen.

Mr. J. BARCROFT (Cambridge) gave a demonstration upon the circulation in the spleen, showing how small was the quantity of carboxyhaemoglobin in the spleen of an animal which had breathed CO. If rats were placed in 0.1 per cent. CO, the blood in the general circulation became saturated up to 50 per cent. in twenty-four minutes, and blood taken from the liver was indistinguishable from that in the general circulation; but the haemoglobin in the spleen required at least another twenty-five minutes to become saturated to the same extent. Conversely, if rats had been in 0.1 per cent. CO till the haemoglobin of their blood and the haemoglobin of their spleen pulp were saturated to over 60 per cent. saturation, and were then exposed to ordinary air, the blood would in forty-five minutes be only 30 per cent. saturated, whilst another hour elapsed before the haemoglobin of the spleen reached that figure. It appeared, therefore, that the spleen pulp contained large numbers of corpuscles which were not circulating in the ordinary sense, and was, in fact, a sort of backwater in the circulation.

Phagocytic Cells of the Omentum.

Drs. J. C. ARMOUR and JOHN TAIT (Toronto), in a communication on phagocytosis by the omentum, said that, as was originally shown by Buxton and Torrey in 1906, there are clusters of phagocytic cells in the omentum of the rabbit and guinea-pig—the so-called "taches laiteuses" of Ranvier. By intraperitoneal injections of Indian ink the distribution and arrangement of the phagocytic cells of the omentum of the cat, dog, rabbit, guinea-pig, woodchuck, squirrel, chipmunk, rat, mouse, and bat had been examined, and it had been found that each kind of animal had its own characteristic and distinctive arrangement of phagocytic cell groups. In the dog, cat, and rabbit the arrangement in the adult was different from that in the newly born. As a rule the phagocytic cells were in clumps or clusters, which might or might not have a special blood supply. Individual phagocytic cells also occurred in the ground substance of the omentum. It was by means of these adhesive phagocytic cell clusters that the omentum attached itself to or wrapped itself around foreign bodies. Tubercle bacilli introduced into the peritoneum became ingested by omental phagocytic cells.

Pernicious Anaemia.

Drs. A. v. SZENT-GYÖRGYI and R. BRINKMAN (Groningen) gave a demonstration on the pathogenesis of pernicious anaemia showing that the haemolytic substances which could be extracted from normal blood consisted of higher fatty acids. In plasma these were inactivated as calcium compounds, but the calcium salts of the higher unsaturated fatty acids preserved their capillary action and were haemolytic. Injection of small amounts of linolenic acid in the rabbit caused a severe haemolytic anaemia. The fraction of higher unsaturated fatty acids was in normal blood very small; in pernicious anaemia it was distinctly increased.

Action of the Diaphragm.

Drs. J. M. W. MORISON and B. A. MCSWINEY (Manchester) read a communication upon the action of the diaphragm in relation to movements of the chest wall. Their investigations were carried out on normal subjects and patients with unilateral paralysis of the diaphragm, congenital and acquired, in order to compare the action of the diaphragm with the movements of the chest wall. *X*-ray examination in cases of unilateral paralysis showed reversed action of the diaphragn on the paralysed side. The movements of the chest wall were recorded by means of a respiratory waistcoat. No movements were observed in the lower part of the chest wall on the affected side. In the upper region there was diminished movement, but otherwise no abnormal change.

England and Wales.

THE GENERAL INFIRMARY AT LEEDS.

THE scheme for the redistribution of beds and cots throughout the Leeds General Infirmary which was adopted some time ago has not had full expression until the recent opening of the remaining large ward for the accommodation of children. Old students of the Infirmary will remember the wards numbered 6, 8, and 10 which form the upper story of the three back pavilions. These have recently been connected by balconies at their northern ends, and in this way an emergency exit is provided in case of fire as well as excellent accommodation for the open-air treatment of the children in suitable weather. Each ward has accommodation for 33 cots. One ward is for medical cases. Surgical cases absorb one ward and 19 cots in another, and the remaining 14 cots are divided between the ophthalmic and aural departments. Between wards 6 and 8 is situated the newly opened Princess Mary ward for infants which can be approached from the square of No. 8 ward as well as from the terrace. There has thus been accomplished what has been aimed at for some years, namely, the provision of "A complete children's hospital within the walls of the General Infirmary" by the segregation of the children and by the extension and improvement of the accommodation for them.

Without further extension the Infirmary is now working to the limit of its capacity. Including a few emergency beds and cots there are now 432 beds for adults, and 112 cots for children. But in a large hospital things must never stand still and there are schemes for the enlargement of the nurses' home, for the development of the instructional block for the students and for the possible formation of a great receiving room department, which it is believed will greatly improve the out-patient department, and make the general working of the Infirmary smoother and more efficient. The large and progressive dental school has its clinical department within the walls of the Infirmary, for the large hall which was used as a waiting room for the out-patient department before the recent extensions, has been modified to meet the requirements of the dental school, which also has the use of a portion of the old operating department. The time will come, and it is hoped that it will come soon, when a fully equipped dental hospital will be built in close rela-

tion with the Infirmary. When this is done a large amount of room will be liberated and this, or some of it, may be utilized in improving the accommodation for the rapidly developing department of radiography. The developments have been so great in it that some account must be given of them in a separate communication.

MEDICAL CHARITABLE SOCIETY FOR THE WEST RIDING.

The annual meeting of the Medical Charitable Society for the West Riding of the County of York was held at Ilkley under the chairmanship of Dr. W. R. Bates, who presided in the absence of Dr. Cheetham, the President for the year. The report for the year ending June 30th, 1923, was most satisfactory. It was recorded that at the former annual meeting, held in Doncaster in July, 1922, no fewer than 63 new members had been elected, which brought the membership up to 879. During the year the Society had to regret the deaths of nine of its members. One of these was Dr. John Irving of Huddersfield, who joined the Society in 1876 and had for many years been one of its most enthusiastic stewards and Dr. J. Young of Sheffield, whose membership dated from 1867. There were four resignations and three names were removed under Rule X, which provides for this in the case of any member whose subscription is three years in arrear and under certain conditions. At the annual meeting just held, 34 new members were elected, so the Society begins the year 1923-24 with a membership of 897. The grants made at the last annual meeting at Doncaster amounted to £1,760, and with the exception of one small grant of £10 which it was found was not required, had been distributed by the stewards of the various districts, bringing the amount distributed in grants since the founding of the Society in 1828 to £70,929 7s. The progress of this Society is really very remarkable. Founded in the year 1828 by a few enthusiastic members of the profession and growing from small things to greater it has carried on its work at a minimum of expense, for it has no paid officials except the auditor, and with everyone—stewards and secretary and treasurer—it is a labour of love. The annual subscription is one guinea, but so carefully and economically has the work been carried on that the Society now possesses investments of a nominal value of £43,374 purchased at a cost of £35,956 2s. 2d., and, as noted above, it has given in grants nearly £80,000. At the annual meeting held at Ilkley grants were made for the year now current for £1,880, and this sum will be distributed by the stewards to the recipients. Great though the work of this Society is it really ought to be much greater. No one is admitted who is over forty years of age and no one is admitted who has been in practice in the West Riding for fifteen years without subscribing to the Society. On all grounds, whether altruistic or politic, everyone who is eligible ought to join this Society; it is either a duty or an act of wisdom, and it may be both. It is right to mention that there are a few medical men who, though not eligible as members, are annual subscribers of one guinea, and some members of the lay public also subscribe annually. From time to time legacies and donations are received by the Society. Thus Mrs. Major, the widow of the late Dr. Major, formerly of Bradford, and well known as the superintendent of the West Riding Asylum at Wakefield in past years, has given the sum of £100 in memory of her husband. Particulars of the work of the Society may be obtained by those desirous of joining from the Treasurer or Secretary of the Society, Park Square, Leeds.

Scotland.

APPEAL FOR EDINBURGH MATERNITY HOSPITAL.

IN an appeal issued by the physicians to the Edinburgh Maternity Hospital in Edinburgh, they call attention to the urgency for providing a new maternity hospital if the high traditions of the Edinburgh School of Midwifery are to be maintained. They also point out the importance of the question in the interest of the public and of the steadily increasing numbers of women who are availing themselves of maternity hospital treatment. Although the present hospital possesses the same accommodation as when it was erected, 1,672 patients were delivered in 1922 as against only 199 in 1870. Owing to this great increase it had been necessary to curtail the period of residence in the hospital during convalescence, although it is fully recognized that a longer period would be to the advantage of both mother and child. As indicating the very large part played by this hospital in the life of the community, it is mentioned that over 30 per cent. of all the births in Edinburgh and Leith either take place in the hospital or are attended by nurses from it at the patients' homes. The hospital is no longer, as it used to be, merely a haven for unmarried mothers; for in 1922 there were 1,345 married women delivered in its wards as against 327 unmarried. The out-patient department for the treatment of expectant mothers was a recent addition to the work of the hospital. This special branch of treatment, now so universally recognized, was inaugurated by the late Dr. J. W. Ballantyne, who was for many years one of the physicians to the hospital. In 1922 there were no fewer than 3,224 attendances at this department. Further, the services of the hospital are not purely local, since complicated and difficult cases are sent in, not merely from the immediately surrounding districts, but from all parts of Scotland. The object of the present appeal is to build a completely new and modern maternity hospital.

CONDENSED MILK REGULATIONS FOR SCOTLAND.

A statutory order has been issued by the Scottish Board of Health dealing with the standard and conditions of sale of condensed milk. "Condensed milk" is defined as milk or skimmed milk which has been concentrated by the removal of part of its water, whether with or without the addition of sugar. Four varieties of condensed milk are recognized—namely, condensed full cream milk, unsweetened; condensed full cream milk, sweetened; condensed skimmed milk, unsweetened; and condensed skimmed milk, sweetened. The last two varieties, in addition to being designated as above, must be labelled "Unfit for Babies." In each case the label must further state to how many pints of milk or skimmed milk, as the case may be, the contents of the tin are equivalent. For the purposes of these rules "milk" is defined to mean milk which contains not less than 12.4 per cent. of milk solids (including not less than 3.6 per cent. of milk fat; and "skimmed milk" to mean milk which contains not less than 9 per cent. of milk solids other than milk fat. No comment on the statement of equivalence is permitted; not any instructions as to dilution which would produce a fluid weaker than natural milk, unless these instructions clearly state that the diluted fluid is not equivalent to milk. Further, a certain degree of concentration in the condensed milk is demanded, so that the condensed full cream milk must contain not less than 9 per cent. of milk fat and 31 per cent. of all milk solids including fat. Powers are also given in the Regulations to Medical Officers of Health and local authorities to procure at any time samples of condensed milk for analysis. When it is desired to test the quantity of milk to which the contents of the tin are equivalent the tin is to be sent unopened to a public analyst; but when the intention is to test the quality, the contents of the tin must be divided into three parts in the same manner as is used for the analysis of fresh milk. The regulations have also been adopted by the Commissioners of Customs and Excise so as to prevent the importation into Scotland of any condensed milk not properly labelled or not containing the requisite amounts of milk fat and milk solids.

Ireland.

PUBLIC HEALTH LEGISLATION IN THE IRISH FREE STATE.

A DEPUTATION from the Irish Medical Committee, consisting of Dr. J. M. Day, Senator W. O'Sullivan, M.D., Dr. R. J. Rowlette, Dr. J. P. Shanly, Dr. T. Hennessy, Medical Secretary, and Mr. C. H. Gick, Secretary, waited on the Minister of Local Government (Mr. E. Blythe) Irish Free State. The deputation was accompanied by Dr. J. Casey, Dr. P. J. Greene, and Mr. M. P. O'Maille, T.D., who attended to make special representations in connexion with the salaries of the Connemara medical officers.

The deputation was introduced to the Minister by Professor M. Hayes, T.D., National University (Speaker in the Dail); Sir James Craig, M.D., T.D. (Dublin University), sent a message expressing his regret that he was unable to be present owing to his absence from home on a holiday. The main object of the deputation was to make certain representations to the Minister of Local Government with regard to the announcement that a Public Health Bill was to be brought forward in the Dail at an early date.

Statement by the Deputation.

Dr. Rowlette, speaking on behalf of the deputation, said that it was understood that the Local Government Department had been at work on a draft for a Public Health Bill, but the Irish Medical Committee had no knowledge of what it might contain. Their view was that no measure would be adequate unless it was thorough-going. The need for thorough and thoughtful attention to public health must be admitted, and the Irish Medical Committee was of opinion that no activity of Government, maintenance of law, development of industry, and defence against enemies, was more essential to the welfare of the nation than the care of the public health. The condition in Ireland gave cause for anxiety. The death rate in other civilized countries had fallen greatly in the past sixty years; in Ireland it had been practically stationary. The mortality from tuberculosis had fallen in Great Britain by a half, in Ireland by only a third. Infant mortality in Ireland as a whole was not high—a fact observed in all pastoral countries. But in the cities of Ireland it was alarmingly high, and Dublin had the highest infant mortality in the British Isles—134 per 1,000 as compared with 80 per 1,000 in London. Less care was paid to public health in Ireland than in any civilized country. In other countries every city and county and every considerable town had its expert whose entire duty was to safeguard the health of the people. In the whole of the Free State there was only one whole-time medical officer of health; the officer for Dublin. In country districts sanitary work, in the modern sense, hardly existed. The dispensary doctor was medical officer of health for his district as well as dispensary doctor. For the duties of this added office he was paid a separate salary, which varied from £5 a year to £30. The salary was, no doubt, fixed contemptuously to emphasize the fact that the authorities did not wish that the duties should be taken seriously. As the dispensary doctor had to make his living as a private practitioner in dependence on the people who were most likely to offend against the sanitary laws, it was clear that a rigorous attention to preventive work was impossible.

The deputation wished to urge the Minister to adopt in its entirety the programme of the Irish Public Health Council which had been accepted by the medical profession, welcomed by the press, and recently had, in its essentials, been put forward by the General Council of County Councils, a body thoroughly representative of the ratepayers of the country. The central features of the programme were the establishment of a Ministry of Health and of a National Medical Service. The mere naming of a ministry as "Ministry of Health" would impress on the Minister and on his staff the predominant importance of their duties regarding health. At present there was nothing to suggest that, among the multifarious activities which came under the supervision of the Ministry of Local Government, health was more important than the care of roads or the control of markets.

The establishment of a national medical service had been recommended in 1906 by the Vice-Regal Commission on Poor Law Reform; it had subsequently received the approval of the medical profession by a plebiscite; the Commission to consider the extension of medical benefits to Ireland, in 1913, advocated it; the Irish Public Health Council, in 1920, discussed the alternative proposal for a county medical service, and unanimously reported in favour of a National Medical Service. The proposal was recently adopted by the General Council of County Councils. The Irish Medical Committee saw no hope of making the public medical services attractive to the best class of young Irish medical men and women by any other means than by the establishment of a National Medical Service.

The profession had welcomed the reforms made during the past few years both by the first Dail and recently on the proposals of the Minister. They were in the right direction but they did not go far enough. The making the county the health unit was a great advance. In one particular, however, they went too far—in the abolition of district hospitals. While the principle of centralization in one hospital in each county was good, there was danger in applying it too rigorously. Patients were averse to travelling too far from their homes, and in many cases of illness the long journey added a great risk. The result was that many patients refused to go to hospital and had to be treated in unsuitable conditions. The Irish Medical Committee did not know whether the Minister had considered the advisability of setting up a body such as the Irish Public Health Council had been, or a health council such as was recommended in the report of the Irish Public Health Council, but thought such a body would be helpful to him.

The Minister of Local Government, in reply, stated that it was his intention to introduce immediately a Public Health Bill but, in view of the early dissolution of the Dail and the general election within the next two weeks, it would be impossible for him to adhere to his programme. He, however, hoped that it would be one of the first measures to be introduced in the Dail after the election. He fully realized the unsatisfactory condition in the Free State of questions relating to public health and the public medical services. It was his intention to have dealt with public health before undertaking the reform of the medical services. He proposed that a county medical officer of health should be appointed to look after each county in the Free State and under him there would be school medical inspectors and tuberculosis medical officers. He hoped that such salaries would be paid as would attract the best young doctors in the profession in Ireland. He did not favour the establishment of a Ministry of Health apart from local government; it was only a difference in nomenclature which in practice meant very little. He favoured the formation of an advisory body similar in functions to the existing Irish Public Health Council. The Minister regretted that owing to an urgent meeting of the Cabinet to which he was summoned he could not wait to discuss many other medical matters with the deputation, but suggested that the deputation should continue the discussion with Mr. McCarron, Secretary of Local Government, and Dr. E. F. Stephenson, Medical Administrator, who were present.

Further Discussion.

Mr. O'Maille, T.D., spoke of the case of doctors in county Galway, especially those in the Connemara district, and protested against the action of the Local Government Department in refusing to sanction the full amount of £300 per annum for the dispensary doctors. Dr. Casey and Dr. Greene, who practise in Connemara, stated that their districts were twenty miles in length and fifteen miles in breadth. Dr. Greene said that the population of his district was over 8,000 and 80 per cent. were treated gratuitously under the Medical Charities Acts. Owing to the inadequacy of his salary he was unable to give sufficient attendance to the sick in his district, as if he were to do so he would have to be paid more than double his present remuneration to cover the travelling expenses. The refusal of the Local Government Department to approve the full amount of the increased salaries passed by the Kinsale Board of Guardians was also the subject of a warm discussion, the deputation pointing out that it was impossible for the doctors in these districts to give an adequate medical service in the circumstances. The deputation brought to the notice also the unsatisfactory conditions of holidays for medical officers in certain counties where unsympathetic local authorities nullified the holiday regulations granting an annual holiday not exceeding one month. Owing to the faulty wording of that regulation it was open to a local authority to give only a few days' holiday and to fix the remuneration at such a low weekly rate that no substitute could be found to accept it. Dr. Stephenson stated, on behalf of the Local Government Department, that such action would be impossible in the future as the revised regulations provided that the doctor going on leave should be allowed a full month's holidays, and that a sufficient remuneration for the substitute would be mandatory on the local authority. The Department, however, would not undertake to go further than treating each case of refusal, in any respect, as it occurred, but promised to act promptly so that the doctor going on leave might take his holidays at the time arranged to suit him, and to urge upon the local authorities to appoint as locumtenent, so far as practicable, the substitute nominated by the doctor going on leave. The question of local authorities including illegal conditions of service in the advertisements for medical vaccines, was also discussed and the deputation suggested that, in accordance with the regulations, notice of each medical vacancy and the terms of the advertisement therefor should be submitted to the Local Government. This suggestion was agreed to. Other matters having been considered the deputation thanked the Local Government officials for their patient hearing of the different questions brought to their notice.

MESSRS. LONGMANS, GREEN AND CO. announce that the new edition of Sir Edward Thorpe's *Dictionary of Applied Chemistry* will extend to seven volumes, a great part of the last volume being devoted to a complete index of the work.

Correspondence.

SMALL-POX, THE VACCINATION PROPAGANDA, AND MALARIA.

SIR,—May I describe an experiment which, taken in conjunction with Captain Gelston Atkins's experience (BRITISH MEDICAL JOURNAL, December 2nd, 1922, p. 1097), may be significant. I have wished to ascertain the effect on small-pox of the treatment described by Surgeon Commander Bastian (BRITISH MEDICAL JOURNAL, July 21st, p. 130), but have lacked opportunity. However, vaccinia is modified small-pox. Recently, after an interval of twenty years, I vaccinated myself; the lesions developed very rapidly; in a few days I had a widening area of inflammation and felt unwell; the vesicular stage was at hand; but as yet I had no fever. Thereupon, one evening, I began the treatment described by Bastian. I slept soundly, and as far as I know, did not sweat. Next day I had no malaise, the inflammation was subsiding, and I enjoyed a game of golf. Treatment was continued for two days more. As far as I am able to judge, I shall have no scars. About the same time I vaccinated a boy of 16. Towards the end of the week his mother brought him to me saying he was "very ill." He had "taken" savagely. The area of inflammation was from shoulder to elbow; vesicles had developed, and he had a temperature of 100°. He was put under treatment, and the next day told me he felt "topping, but I *did* sweat." These two cases are typical of several others. As anyone who cares to try the experiment may observe for himself, it is possible to abort vaccinia at any stage, and, if vaccinia, doubtless small-pox also. Apparently Captain Gelston Atkins did abort small-pox, just as Dr. Djanian aborted pneumonia (BRITISH MEDICAL JOURNAL, July 21st, p. 129).

It may be doubted whether aborted vaccinia is effective as a prevention of smallpox. But, here, as in virulent small-pox, we have two consecutive diseases—the initial malady which ends with vesication (or, in effect, in small-pox with the primary fall of temperature), and against which immunity is by then achieved; and septic infection, which is the cause of nearly all the danger and all the disfigurement, and which would not occur in the absence of the initial disease. Experience of sepsis, therefore, is of no advantage, and should by all means be prevented. By way of test, I revaccinated myself a fortnight later. The lesions itched a good deal during the second day and then subsided without treatment. Anyone may repeat my very simple experiments, and, I think, obtain similar results. In fact I believe they are already in process of repetition on a more extended scale. Of course, I do not suggest that cure (abortion) shall replace prevention (vaccination), but I do suggest that when small-pox has been contracted it is possible to mitigate its severity very greatly, and that the vaccination propaganda would be aided were it known that the sufferings caused by vaccination may be made trivial. Again, I hope that gentlemen who repeat my simple experiments will perceive that here we have a treatment of wide application, which will abort many conditions of fever, inflammation, and pain—for example, pneumonia, erysipelas, herpes zoster, and carbuncle.

As indicated by Commander Bastian, the idea underlying the treatment is that toxins are the weapons used by the organisms of acute disease against the cells of the body and their weapons. The constant accompaniment of a moist skin with recovery from acute disease, and the occurrence of heavy sweating during crises (as in pneumonia and malaria), is presumptive evidence that toxins are eliminated by the sweat. Presumably the toxins paralyse the sweat centre, and so, becoming concentrated, put the intrusive organisms in a position of advantage. The treatment deparalyses the centre, the toxins are eliminated, and the cells are placed at advantage. It has been suggested that the treatment is, in effect, one which was tried and found wanting many years ago. But the agents formerly used, especially pilocarpine the chief of them, were often sudorifics which caused sweating in health and disease, and usually the resultant fall of temperature was less than a degree. They stimulated the sweat centre or paralysed its inhibitory mechanism. The formula described by Commander Bastian causes no sweating nor fall of temperature unless fever (toxaemia) be present, and then the effect is strictly proportionate to the degree of fever. I have seen a fall of 6° in acute phthisis without injury to the patient. In phthisis one does not get cure, for the fever results from sepsis, which is constantly renewed, but one often gets temporary improvement.

May I make another appeal. Biologically speaking it is certain that the organisms of malaria excrete their toxins when they are required for defence—that is, during the stage of schizogony when the organisms, leaving the red corpuscles, are probably most susceptible to attack. If the treatment were tried at the earliest hint of the hot stage it ought to prove beneficial by ending that stage very quickly and leaving the merozoites more or less defenceless. Aspirin has already been found useful. Of course, the ordinary treatment by quinine may be employed at the same time. I should be most grateful if those who have opportunities made the experiment and published their results. Without publication, nothing is gained but private experience.—I am, etc.,

Southsea, July 30th. G. ARCHDALL REID.

THE IMPERIAL CANCER RESEARCH CAMPAIGN AND THE CANCER PROBLEM.

SIR,—The labours of the Medical Research Council and of the administrators of the Imperial Cancer Research Fund have been distinctly disappointing, and I fear unless the promoters of the British Empire Cancer Campaign exercise their functions as to the use of the moneys they secure very wisely and very well, the knowledge gained may be equally disheartening and disappointing.

Before going to the public for the large sum of money they require to put cancer research on a hopeful basis, it would be well to ensure that the administrative side of the scheme should be worked out, not by a committee of scientists and medical experts alone, but that men of proved administrative and business capacity should be added to it, and that when the scheme is decided upon its operation should be in the hands of such a hybrid committee, and that it should have such powers of control conferred upon it as would ensure efficient co-ordination and co-operation, the avoidance of overlapping, and the strictest economy in the carrying out of research in all its varied departments. This committee should have power to afford pecuniary aid and special facilities for using the resources of any or all institutions subsidized from their funds to individuals who in their opinion displayed unusual ability, originality, and initiative in research.

The subsidy granted by the Treasury to the Imperial Cancer Research Fund is utterly inadequate, and during the debate on the Ministry of Health Vote on June 28th, in response to my appeal, the Ministry admitted this; but unless the public shows decidedly that it is behind the Minister in this connexion, I fear the Treasury will not find the necessary funds. In virtue of any subsidy granted by the House of Commons, the Minister of Health, officials of his department, and members of the House should be represented on the committee.

In my view, however, the Minister can assist research in other ways than by subsidy, and that, too, to an extent and with an efficiency which he alone can bring to bear. I refer to the clinical side of research. He alone can procure and collate that mass of clinical and other information possessed by the medical practitioners throughout the country. Through his medical officers of health and their staffs and the Registrar-General's Department every case of death from cancer notified might be investigated, not by a lay official, but by the medical officer of health himself or his tuberculosis officer, and a questionnaire drawn up that might include all matters bearing upon possible cancer causation. Cancer areas—and there are such—might be mapped out. Cancer houses—and it is suspected there are such—might be located. Information might be gleaned from meteorological, geological, water and food supply experts, *et hoc genus omne*. No possible avenue of approach of

cancer should be left unexplored, and this could best be done through the health departments of the various local authorities under the guidance of the Minister. We are so utterly ignorant of the causes and sources of cancer that we never know at what moment or from what direction illuminating knowledge may arrive.—I am, etc.,

Blackpool, Aug. 1st. LEONARD MOLLOY.

CONGENITAL HYPERTROPHY OF THE PYLORUS.

SIR,—I have read with the greatest interest Dr. G. F. Still's instructive account of his experience in the treatment of congenital hypertrophy of the pylorus, which appeared in your issue of April 7th. To me, Dr. Still's apology for broaching a subject about which so much has been written in recent years seemed quite unnecessary, as it is most important to stress the high proportion of cures which can be brought about by early operation in a condition so easy to diagnose. Such diagnosis is only easy, however, when the existence of the condition is realized and search made for its distinctive signs.

It is a surprise to me to notice the low proportion of recoveries after the Rammstedt operation in Dr. Still's series. In the last three years I have performed this operation, which I first saw done by Mr. Tyrrell Gray at Great Ormond Street, in eighteen cases with two deaths. Of these, fifteen were cases at the Children's Hospital, Melbourne. This series is small compared with those of some American surgeons whose mortality rate is lower than mine, but I see no reason why, with further experience, especially as regards earlier diagnosis, these results should not be improved. Notwithstanding the extraordinarily good results of forcible dilatation in Dr. Still's private cases, it would appear that the simple muscle division of the Rammstedt operation, which can be carried out comfortably in ten to fifteen minutes, is more suitable for general use than the modified Loreta's operation, which theoretically is more severe, but of which I have had no experience.

On this point I should like to have the benefit of Dr. Still's large experience. Has he noticed any indications which would lead him to advise the Rammstedt or Loreta method of operation in individual cases, or does the choice entirely depend on the preference of the surgeon?

To my mind, speed is essential to a successful result, especially since delayed diagnosis is so often responsible for exhausted patients. Even more important is warmth during and after operation; a hot bed in which the heating is by electric light bulbs is very satisfactory. Such details as these make all the difference in an enfeebled baby.—I am, etc.,

Melbourne, June 10th. RUPERT M. DOWNES.

MEDICAL CHARITIES.

SIR,—The question put by Dr. Macdonald, the well deserved reflection on the scant support accorded by the profession made by Dr. Dearden, and the reply by the Treasurer at the Annual Meeting will, I hope, bring home to the profession the needs of the Royal Medical Benevolent Fund.

Dr. Haslip's remarks call for some reply, and especially for information as to the efforts that are being made by the Committee of Management to increase the income of the Fund. Dr. Haslip is (as he stated) a member of this Committee and as such has a voice in the management. It is a matter of regret that owing to his many engagements and his recent illness he has not been able to attend as often as we could wish.

The Medical Agency, of which Dr. Haslip is chairman, has contributed most handsomely to the Fund. These gifts have been acknowledged with gratitude not only by the Committee of Management and in the medical press, but by special letters from the Treasurer.

The subscriptions collected through the medium of the Association amounted last year to £800. Moreover, through the kindness of the Editor of the *Lancet* and the Editor of the *British Medical Journal* a summary of grants is published monthly. Those who read their journals cannot but be informed of the existence and the needs of the Fund.

The conference to which Dr. Haslip refers took place in 1922 at the request of the officials of the British Medical Association, and was attended by representatives of Epsom College and of the Royal Medical Benevolent Fund. Dr. Haslip proposed that the two bodies should be amalgamated and that there should be a central bureau for the collection of subscriptions. This proposal did not meet with the approval of either body, as it involved the abandonment of organizations, metropolitan and provincial, for the collection of funds that had been built up by years of patient endeavour, without any sufficient assurance of their adequate replacement; and in the case of Epsom College there was the additional objection that such action would tend to restore to the college as a whole, which is a general public school of the ordinary type, a charitable aspect that had been proven to be harmful to the College, as well as to the Medical Foundation incorporate in it, and which some thirty years ago was an important factor in inducing the Council of Epsom College to obtain an amending Act of Parliament. It was felt also that the aims of Epsom College and the Royal Medical Benevolent Fund were essentially distinct, in that the former existed primarily for educational, the latter exclusively for charitable, purposes.

Seeing that so far as the Fund was concerned some 20,000 members of the profession do not belong to the British Medical Association, it was considered wiser to remain free to appeal from one centre to the profession as a whole. This proposal would, moreover, entirely disorganize the present system of collecting subscriptions through local secretaries, which adds a personal and sympathetic touch of no little value.

Dr. Haslip's effort in the cause of education and of charity was cordially appreciated by both bodies, and I hope will not be lost upon the profession.

That the executive have not been idle in developing new ideas and methods during the last few years the following brief account will indicate, and will go some way, I hope, to remove the impression of apathy conveyed in Dr. Haslip's remarks. It is an error into which he could not have fallen had he been in closer touch with the management.

During the last two years special appeals have been issued in the following districts: Bath, Birmingham, Bolton, Bristol, Bromley, Birkenhead, Bury, Cambridge, Cornwall, South Wales and Monmouthshire, Surrey, Devonshire, Bootle, Manchester, Portsmouth, Buxton, Burnley, Weybridge, Watford, Sutton, Enfield, Blackburn, Altrincham, and similar appeals are being prepared for other towns this autumn.

Realizing that printed matter is often thrown in the waste-paper basket unread, the various local secretaries have been asked to write out an appeal, which has been reproduced. A stamped envelope is addressed to every non-subscriber and sent to the local secretary, who completes the letter by inserting the name. The reply is returned to the office or the local secretary, as the latter desires. In some cases an addressed stamped envelope is enclosed for reply. Up to the time of writing over £400 in new subscriptions, largely in banker's orders, have been received this year, and replies are still coming in. Not only have these undertakings been initiated by the honorary secretary, Dr. Newton Pitt, but owing to the illness of the secretary the bulk of the work has fallen upon him. The festival dinner in 1913, at which £3,197 was raised, at least informed the profession, the entire body being circularized of the existence and needs of the Fund.

Taking the last two decennial periods, the income from investments and subscriptions mounted in 1902 to £3,946, in 1912 to £6,222, and in 1922 to £8,080. The amounts distributed were respectively £3,795, £5,497, £8,397. The number of grantees has increased from 140 in 1902 to 304 in 1922, and annuitants from 140 to 168. The progress of the Guild, a branch of the Fund, is shown by the increase in income from £1,725 in 1912 to £2,536 in 1922. The progressive character and successful results of the Guild's work are well known. Notwithstanding all that is being done the income is far below what is needed, and it must, I fear, be recognized that the lack of support is

due to the apathy of the profession and not to the slackness of the Committee of Management or its Executive.—I am, etc.,

CHARTERS J. SYMONDS,
Honorary Treasurer, Royal Medical Benevolent Fund.

Chandos Street, W., Aug. 7th.

SIR,—Dr. Haslip, Treasurer, British Medical Association, when speaking of the lack of support of the Royal Medical Benevolent Fund, stated that "the fund was still run in the same way as it was ten, twenty, and perhaps thirty years ago. There was no progress, no new ideas, in the management of those charities."

This may be correct with respect to the administration of the fund, probably necessarily so having regard to the limited sums at the disposal of the Committee; but I venture to think that a new idea of a progressive nature was introduced when the medical practitioners on the panel in Leicester consented unanimously to subscribe annually towards medical and allied charities a farthing for each State-insured person on their lists.

This yields over £100 per annum, and £50 has been given to the Royal Medical Benevolent Fund for each of the last two years, and in all probability a similar sum will be sent this year. The remainder of the amount raised is distributed locally to medical and allied charities.

I would suggest that steps be taken to urge every State Insurance area in the country to follow this example.

If this were effected, the "disgrace to the profession" would be quickly removed as the sum accruing on, say, ten million insured persons would be upwards of £10,400 per annum. This would enable the Committee to deal with a more generous hand, and the stigma of "miserable doles" would be a thing of the past.—I am, etc.,

ASTLEY V. CLARKE,
Treasurer, Leicester Subdivision of Union of Medical Practitioners.

Leicester, July 27th.

TREATMENT OF VENEREAL DISEASE.

SIR,—The Merchant Shipping Act (Amendments) Bill received the Royal Assent on August 2nd, and is now law. I was fortunate in being twenty-fifth in the ballot for private members' bills. I promoted this bill, the object of which is to remove a disability with regard to the treatment of masters and sailors of the Mercantile Marine Service.

Subsection 1 of Section 34 of the Merchant Shipping Act of 1906, whilst it provides for the free treatment of injuries and illnesses of masters and men both on board ship and in hospital, excluded the treatment of venereal disease. The result was that sailors were not only denied treatment but were liable to be left friendless and without funds whilst in foreign hospitals. Foreign doctors and irregular practitioners charged excessive sums for treatment, and the treatment must have been of the worst possible, inasmuch as it was incomplete.

The Royal Commission which sat between 1913 and 1915, of which I was a member, advised free treatment in the British Isles for venereal disease. In answer to a question in the House of Commons the Minister of Health informed the House that 162,000 persons had applied last year for treatment in the various venereal clinics in this country; British sailors in British ships were denied this privilege. The object of the bill, therefore, was to do a simple act of justice to a very brave type—the British seaman.

I have been at a very great deal of trouble over the bill, and although it only consisted of one clause it has given me a great deal of hard work. I have had the hearty support of the Minister of Health, and of Lord Wolmer, the Parliamentary Secretary of the Board of Trade (who has been most sympathetic and helpful). Both the Shipping Federation and the Seafarers' Joint Council have supported me; indeed, the bill has had the support of every section of both the Lords and Commons.

From the public health point of view, this small bill is one of very considerable importance, for the perfunctory treatment which these cases have received, and the concealment which the law encouraged, must have had a material effect in spreading disease when the sailors returned to this country. In 1921, 8,313 infants became blind from ophthalmia neonatorum, and it is well known that 15 per cent. of the inmates of our mental hospitals owe their condition to the etiological factors which this bill has done something to mitigate.

Several years ago I had the curiosity to take specimens of the blood of 500 apparently healthy men and had the blood examined by Sir Frederick Mott, with the result that 10 per cent. showed evidence that at one time they had syphilis (see report of Royal Commission on Venereal Disease).

This bill will relieve the mental and physical disability of the men, and prevent their being a danger. This is the only Act passed by my party this session.—I am, etc.,

London, W.2, Aug. 2nd. JOHN COLLIE.

THE PRESIDENT'S ADDRESS.

SIR,—I should like to draw attention to one or two points in the President's address at Portsmouth, to which I had the privilege of listening.

1. Want of fresh air and sunlight, as Dr. Goodwin observed in your last issue, cannot be the sole cause of tuberculosis, as it is prevalent in many tropical countries like India where the people live in plenty of sunlight and fresh air. That deficient nutrition is an important factor is proved on a large scale by the great prevalence of the disease in Germany and other mid-European countries during and after the great war. Even at Hayling Island Sanatorium and at Alton regular feeding, bathing, rest, and exercise to improve metabolism are insisted upon in the arrest of surgical tuberculosis. In fact, deficiency of social and sanitary conditions often go together as causative factors, and it is because sanatorium treatment has attempted to supply these deficiencies that it has its value in the arrest of tuberculosis.

2. My recent and extensive travel in India has not confirmed Dr. Hutchison's observation that rickets is a disease of the rich in that country. The disease is found both among the wealthy and the poor. If it is more prevalent among the rich it is due to the dislike or inability of many mothers of the well-to-do classes to nurse their children and to the more extensive substitution of patent and artificial foods. If rickets is not so commonly found among the poor it is because they nurse their children more than the rich, though their living conditions in the huts and slums are often very unhygienic and insanitary. So that faulty nutrition is a factor as important—if not more—as faulty hygiene in the causation of rickets in India, and when both are present, as they often are, they make for metabolic disturbance and pathological changes which bring about, as Dr. Robert McCarrison has pointed out, many a diseased condition in India—including tuberculosis and rickets.—I am, etc.,

Mendip Hills Sanatorium, Aug. 6th. C. MUTHU.

TUBERCLE VACCINES.

SIR,—The term lipoid has given rise to much confusion in the past, and at the present time, in the numerous statements which have appeared in connexion with Professor G. Dreyer's new work, it is by no means clear what it is intended to indicate.

In the preparation of his vaccines and antigens Professor Dreyer, as is well known, removes the waxy or fatty coat of the tubercle bacillus by formalin and acetone extraction *in vitro*. The substances are collectively spoken of by him as "lipoid and lipoidal." The question of this removal raised in Dreyer's work is specially interesting to me because it may be remembered that in the BRITISH MEDICAL JOURNAL and elsewhere I have suggested that the lipoids might be of considerable use and that "in tuberculosis preparations of the bacillus should yield fruitful results." I have, however, employed the terms "phosphorized fats (lipoids or lipins)" also and not solely of the tubercle bacillus but of normal organs, and of other pathological tissues. It seems desirable to point out that the lipoids as recognized and described in Professor Halliburton's well known textbook include fat-like substances differing from the normal fats in containing nitrogen

or phosphorus or both. The latter are called the phosphatides, and are soluble in, or extracted from, organs and tissues by ether and alcohol. The term lipin as defined by Professor Maclean, including the phosphatides, are "substances of a fat-like nature yielding on hydrolysis fatty acids or derivatives of fatty acids and containing in their molecule either nitrogen or nitrogen and phosphorus." Generally speaking, the phosphatides are soluble in the majority of ordinary solvents for fat with the exception of acetone, in which they are practically insoluble. Professor Dreyer repeats and emphasizes that "it was by no means intended to imply that all fatty and lipoidal substances present in the micro-organisms had been removed. Only some of the lipoidal substances are taken away in this mode of preparation by washing with acetone after formalin treatment." This view accords, therefore, with the above-mentioned fact that acetone does not extract this group of substances. The acid-fast properties are usually attributed to the waxy substances which, however desirable to remove *in vitro*, are not included in the lipoid, phosphatide or lipin group of substances.

In the interesting description of Dr. David Thomson's method of defatting bacilli the conclusion is that lipoids are not of much antigenic value. For this reason he practically uses the protein fraction. He notes, however, the work of others who claim antigenic properties for the lipoids and the waxes.

It may be useful to workers in this field to point out a third method to which I have drawn attention and employed in dealing with the tubercle bacillus. It is preliminary to digest or split the fats and lipoids of killed tubercle bacilli by lipase—the natural fat and lipoid-splitting agent. In this way saponified extracts were prepared and indicated for therapeutic use. Preparations were made also by extracting tuberculous material with the usual fat and lipoid solvents (alcohol, ether and chloroform) successively in the cold, or in a Soxhlet's apparatus in the usual way, and after evaporation saponifying or emulsifying the extracted material.

The method in the main differs from others in that the products of the fats and lipoids are utilized, together with the proteins, phosphates and other constituents or derivatives of the bacillus. By means of ether the fatty acids and protein fraction can be separated and thus used either together or separately.

I have preferred to adopt the current nomenclature, namely "activators" or "co-enzymes" of lipase rather than "antigens" because the former more correctly indicate the part played by these and allied substances after injection in the stimulation of lipolytic activity in the blood and tissues, and thus attacking the fats and lipoids of the bacillus in the infected organism.

I have been using the same method of preparation in dealing with the fats and lipoids of the cancer cell and tissues. In this case acid-meta-proteins (hydrochloric and acetic acid) preparations have been made and used also, on the basis that similar preparations from normal tissues were found in my former experiments to markedly act as stimulants of lypolytic activity in the blood and tissues.—I am, etc.,

J. A. SHAW-MACKENZIE, M.D.Lond.

London, July 16th.

AN association for the study of hay fever, asthma, and allergic diseases, limited to 100 members, has been formed, with Dr. Grant L. Selfridge, of San Francisco, as president.

THE number of cases of small-pox notified in Germany during 1922 was 215, as compared with 688 in 1921 and 2,042 in 1920. Most of the cases during these years occurred in the Oppeln district in Upper Silesia. In 1922 an epidemic of 135 cases was apparently caused by the burial of a child from Poland who had died of small-pox and by a newspaper carrier continuing his occupation while suffering from the disease.

A NATIONAL Congress of Physical Education will be held at Bordeaux from September 24th to 26th, under the presidency of Professor Sigalas, Dean of the Bordeaux Faculty of Medicine. The work of the Congress will be divided into three sections: (1) Physiology, circulation and respiration during exercise; (2) physical education, the dosage of exercise for the child; (3) choice of sports according to age.

Obituary.

WILLIAM FORD ROBERTSON, M.D.,

Pathologist to the Scottish Asylums.

BY the untimely death of Dr. William Ford Robertson, cut off by illness in his 56th year, in the midst of his all-absorbing and invaluable researches and his illuminating and highly important discoveries, Scotland has lost one of her most gifted and devoted workers in the field of pathology and medicine, and the world has been deprived of one who throughout his life was predominantly imbued and impelled both by an altruistic desire to do something to alleviate pain and suffering, and by the true spirit of research, the pursuit of truth for its own sake.

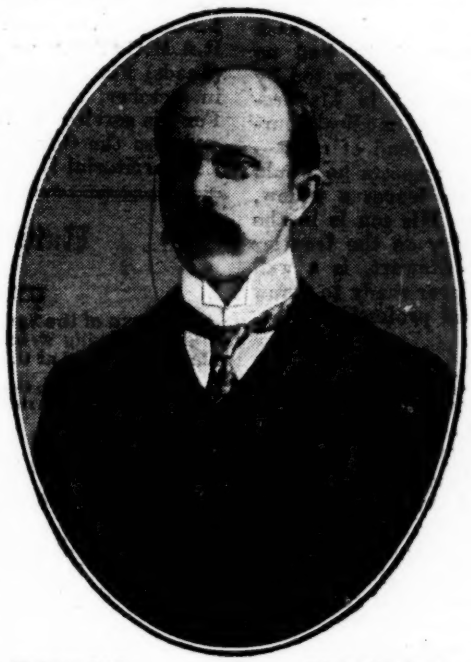
He was born on July 28th, 1867, at the farm of Nottyle, on the south bank of the Tweed, but just within the Scottish border. His father died in 1870, and the son, after a short period at Eskbank Academy, went to George Watson's College, Edinburgh where he received his main school education. Afterwards he had two years' business training in a lawyer's office, and then entered as a medical student at the University of Edinburgh. During the later years of his undergraduate course he undertook to do extra work in the pathological department of the Edinburgh Royal Infirmary, which was then under the charge of Dr. William Russell, now Emeritus Professor of Clinical Medicine; here he displayed his innate powers of enthusiasm, originality, and manipulative dexterity. Certain improvements which he devised in histological methods were deemed worthy of publication in the *Journal of Anatomy and Physiology*—an exceptional distinction for an undergraduate. He graduated M.B., C.M.Edinburgh in 1891; afterwards he held the appointment of house-physician at the Edinburgh Royal Infirmary under the late Dr. Wyllie, and at the Royal Hospital for Sick Children, Edinburgh, under Dr. T. M. Burn-Murdoch. After a short experience of general practice he determined to devote himself to medical research as a speciality and end in itself and not merely as a stepping-stone to some senior hospital or university appointment, and Sir Thomas (then Dr.) Clouston secured his services as pathologist to the Royal Edinburgh Asylum in succession to the late Dr. James Middlemass, who in 1893 had been appointed assistant physician.

In 1894 Ford Robertson—for a year, in collaboration with Middlemass—commenced a series of papers planned systematically to elucidate the pathology of the nervous system in relation to mental diseases. The joint papers on the morbid changes met with among the insane in the scalp, skull, and membranes, and on the weight and other characters of the brain, as well as those by Ford Robertson himself on the changes in the vessels of the brain, first appeared serially in the *Edinburgh Medical Journal* from 1894 to 1896. He continued to carry out the original scheme single-handed by a series of brilliant researches on the changes in the neuroglia, nerve cells, and nerve fibres of the brain, the results of which were published later in various medical and scientific journals. Ford Robertson's splendid work had now attracted much attention both at home and abroad, and those who realized its value felt that it would be a lasting gain if the services of such a gifted and enthusiastic researcher could be permanently retained. In this way arose the "Scottish Asylums' Pathological Scheme" with its Conjoint Laboratory, and by the unanimous consent of its supporters Dr. Ford Robertson was appointed its first pathologist in 1897. The scheme owed its initiation to the foresight of the late Sir Thomas Clouston, its development to the co-operation of the majority of the other medical superintendents of the Scottish Asylums, and its final establishment to the backing and financial support of the contributing Asylum Boards, supplemented in later years by occasional grants from the Carnegie Trust, or from the Treasury or Medical Research Council through the General Board of Control for Scotland.

Ford Robertson's record as pathologist to the Scottish Asylums from 1897 till his death was one of incessant and exacting labour. The routine work of the Conjoint

laboratory comprised, in addition to the prosecution of iginal researches by the pathologist, the giving of courses instruction on special pathological methods to the dical staffs of the contributing asylums, visits to the rious asylum laboratories to advise on questions of equipnt and methods, the preparation of standard sets of croscopical specimens showing the tissue changes in anity, the provision of a reference and circulating rary of neurological and psychiatrical literature, the llection from the asylums of special material required r any particular investigation undertaken by any mem- of the medical staffs, and the furnishing of reports th microscopical specimens, on material of special interest t for examination from the contributing asylums. Ford bertson devoted himself to these multifarious duties most nscientiously, and from the first he threw himself whole-rtedly into the chief purpose of the scheme, the prosecu- n of original research. He completed the enterprise on hich he had started in 1894, and, as this occupied seven ars, he had to re-write the earlier chapters in order to ing them up-to-date. His *Pathology of Mental Diseases* s published in 1900. It incor- ated the results not only of his n patient and independent labora- y investigations and beautiful hnique, but also of his wide read- g of the vast literature on the sub- t in English, French, Italian, and rman, any contribution of impor- ce in these languages up to 1900 eiving due and appropriate notice, ier careful abstraction (in short- nd) and digestion.

In 1899 Ford Robertson urged the portance of equipping the labora- y for bacteriological and chemical well as histological researches and pealed for increased financial sup- rt in order that a biochemist might appointed. Facilities were pro- ded for bacteriological work, but e funds did not permit the appoint- nt of a biochemist. Ford Robert- n at once embarked on a long series researches on the relation of in- ctions to the insanities, as well as her diseases; they occupied the re- ainder of his life. At first he con- trated on the pathogenesis of neral paralysis, and embodied his sults in the Morison Lectures 06). Subsequently the discovery the spirochaete of syphilis in the central nervous system general paralysis and tabes rendered it probable that the phtheroid infections of the genito-urinary, respiratory, and estinal tracts found in these diseases, and to which rd Robertson and his colleagues were inclined to attach causal significance, played a secondary part, being of portance in the final deterioration of the patient's health. 1912 Ford Robertson concentrated on the bacteriological estigations of dementia praecox and the acute insanities, d in 1921 published his book on *Therapeutic Immuniza- in Asylum and General Practice*. His researches icate that the more fully the pathogenesis of insanity, as other bodily diseases, is investigated, the more extensive nes the group in which infection is seen to be an ential factor, and that by the method of focal reaction be demonstrated the pathogenic importance of many he organisms inhabiting the body, among which he drew ial attention to anaerobic forms which had hitherto n much neglected. By means of specific immunization autogenous vaccines, derived from the individual ent in each case, and rendered more potent by sensitiza- with antiserum obtained from immunized sheep, and eans of his gravimetric method of preparing vaccines, in r to secure more accurate dosage, he demonstrated that y of these pathogenic infections in the insanities and r diseases could be effectually controlled and eliminated.



Photograph by] [Maffat, Edinburgh.

DR. FORD ROBERTSON.

Many of these infections, aerobic and anaerobic, are neurotoxic, and in neurotic individuals they attack the vulnerable higher brain cells which fix the toxins, and give rise to various forms of insanity; and in the course of time, according to Ford Robertson's later work, they paralyse the nervous mechanism of the intestine, producing a condition of intestinal stasis with resultant secondary putrefactive auto-intoxication, under the stress of which the brain cells finally break down, this being the course of events when dementia or permanent mental enfeeblement supervenes.

Ford Robertson held a high opinion of Italian research work in insanity, and in 1904 he visited various neurological and psychiatrical laboratories in Italy. In 1908 he and Dr. T. C. Mackenzie published their translation of Tanzi's standard *Textbook of Mental Diseases*, and at the time of his death he was planning the translation of the last edition. He was greatly interested also in the etiology of cancer, and in 1905 published, jointly with Dr. Henry Wade, a paper stating that a protozoan parasite resembling the *Plasmodiophora brassica*, known to be the cause of tumours of certain plants, could be cultivated from carcinoma. He published further papers on this subject in 1907 and 1908, and shortly before his lamented death he had arranged for a demonstration of his last findings on the parasitic origin of cancer—which fate ordained should be given by his medical son and namesake—at the recent Annual Meeting of the British Medical Association in Portsmouth.

Dr. Ford Robertson married in 1897 and is survived by his widow and three sons, one of whom has nearly completed his studies in medicine at the University of Edinburgh.

We are indebted to Dr. W. Russell for the following tribute to Dr. Robertson's memory: I knew Ford Robertson first when as a senior student he worked in the pathological department of the Edinburgh Royal Infirmary with the same enthusiasm, a like manipulative dexterity and originality as characterized his work in the years which succeeded. In the domain of bacteriology he laboured with unflagging industry, with high enthusiasm, with striking originality and unbounded optimism. He applied all his gifts to the elucidation of certain brain disorders common in asylums, and prepared vaccines at a time when their use was in its infancy. He investigated the bacteriology of and prepared vaccines for many maladies associated with the presence of micro-organisms, and his skill in that department was widely recognized. He had an unshakeable faith in the efficacy of vaccines when properly and courageously adminstered, and his latest published work testified to this. He had early been attracted to the etiology of cancer, and whenever he could snatch time he swung back to that great problem. He displayed great originality in the means he used to find the causative factor; and his work in that direction was always interesting if not convincing. Failure never daunted him or robbed him of the great optimism which was essentially his. He was confident that the malady was of micro-organismal origin, and from that he easily stepped to a settled belief that he would ultimately make an efficient vaccine. Shortly before his last illness he was full of his latest methods of investigation and confident of the successful outcome of his work. Under more favourable conditions in his earlier years of work his talents and gifts would assuredly have carried him far in the field he so assiduously cultivated; indeed, but for his early death, he might have reached great distinction in spite of those disadvantages. Such a life can ill be spared.

ANDREW STEWART, L.R.C.P. AND S.EDIN.,
Consulting Surgeon, Birkenhead Borough Hospital.

DR. ANDREW STEWART died on July 30th, aged 69. He was educated at Liverpool and St. Bartholomew's Hospital, and took the diplomas of L.R.C.P. and S. and L.M.Edin. in 1881. After serving for fifteen years as honorary acting surgeon to the Birkenhead Borough Hospital he was appointed consulting surgeon to that instiution.

Sir James Barr (Liverpool) writes: By the death of Dr. Andrew Stewart, Birkenhead has lost a very notable medical man and one who will be long remembered by all who knew him. For the last ten years or more he suffered from the incapacitating effects of chronic myocarditis, but he did not allow his disability to interfere with his work or pleasure. Although he long recognized that his terminus would be abrupt, and he spoke freely of it with the greatest amount of sang-froid, he was ever one of the cheeriest of mortals, and it did not require to be long in his company to feel that whatever might be the condition of his heart his alert mind would serve him to the last. His end came very suddenly in the presence of his devoted wife, while sitting at his desk writing a letter. For Andrew Stewart death had no terrors, and he died as he lived, beloved and respected by all who knew him. He took great interest in his professional work, was a diligent reader of the medical journals, a man of wide general culture, and fond of sport—devoted to boating and golf. In many respects he would have made a fair Sherlock Holmes. He leaves a widow, son, and daughter to mourn their loss. His son is in the army, and at present serving his country on the frontier of India. His brother, Mr. Gershom Stewart, is a well known Member of Parliament, and one ever ready to throw his weight into the service of the medical profession.

FREDERIC J. KNOWLES, M.R.C.S., L.R.C.P.,
Honorary Secretary, St. Helens Division.

BY the death on July 27th of Dr. Frederic Joseph Knowles the profession and the citizens of St. Helens and district have suffered a grievous loss. Dr. Knowles was born in St. Helens and received his medical education in the University College of Liverpool, and London. After obtaining the M.R.C.S.Eng. and the L.R.C.P.Lond. in 1885, he commenced practice in his native town. He had been honorary secretary to the St. Helens Division of the British Medical Association since 1913.

Dr. Knowles was a keen volunteer and retired in 1910 as lieutenant-colonel. He was honorary colonel R.A.M.C., and had received the Territorial Decoration. For thirty years he had been an examiner to the St. John Ambulance. He took an active interest in athletics—swimming, tennis, and cricket—and was a freemason.

His funeral, which was of a military character, was attended by almost every doctor in the district, and the streets of the town were lined by sympathetic crowds. The death of Dr. Knowles has removed an outstanding figure from the professional and social life of St. Helens.

DR. ALEXANDER MACKAY of Crook, co. Durham, who died on June 23rd, aged 78, was educated at the Universities of Edinburgh and Glasgow; he graduated M.B., C.M. at the latter in 1870, and M.D. in 1874. After serving as assistant surgeon to the Glasgow Ophthalmic Institute and to the Glasgow Royal Infirmary, he took over, at the age of 22, the practice of the late Dr. Kelby of Crook, which grew to very large dimensions. Dr. Mackay was medical officer of the Crook District of the Auckland Union and physician to Ushaw College. He was a great sportsman and hunted regularly, until two years ago, with the South Durham and the Marquess of Zetland's hounds; he was also a keen farmer, and until recently owned and managed a farm. He was an old member of the Bishop Auckland Division of the British Medical Association and a justice of the peace for the county of Durham. He is survived by two sons and a daughter, one of his sons having succeeded him in his practice.

DR. LOT ALBERT TAYLOR, who died suddenly at Kidderminster on July 20th, practised until a short time ago at Kinver, Stourbridge. He was educated at Queen's and Mason Colleges, Birmingham, and took the diplomas of M.R.C.S.Eng. in 1886 and L.R.C.P.Edin. in 1887; he took the D.P.H. in 1889. After holding house appointments at the General Hospital and Queen's Hospital, Birmingham, he went into practice at Kinver, where he was medical officer and public vaccinator for Kinver District of Seisdon Union. Dr. Taylor was indefatigable in the work which he did for the Dudley Division of the British Medical Association, of which he was honorary secretary and formerly chairman; he did valuable work also on the Panel Committee. During the war he had charge of fifty beds at the Wordsley Military Hospital, and he undoubtedly suffered from the strain of this in conjunction with his practice. He was a justice of the peace for the county of Stafford, and everywhere earned respect and affection.

DR. ALEXANDER BRODIE SETON STEWART, O.B.E., who died suddenly at Watford on July 3rd, was educated at the Leeds Medical School; he took the L.S.A. in 1894, and became L.M.S.S.A. in 1907. He was given a commission in the R.A.M.C.(T.F.) as lieutenant in the 1st West Riding (Leeds) Field Ambulance, becoming captain in 1910, major in October, 1914, and lieutenant-colonel in June, 1916. For his services in the war he received the O.B.E. in 1919, and also the third class of the Serbian Order of St. Sava; the Territorial Decoration was conferred upon him in 1920.

Universities and Colleges.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on July 18th.

The following were recognized as teachers of the University in the subjects and at the institutions indicated:

St. Thomas's Hospital Medical School.—Dr. S. E. Dore (Dermatology), Colonel L. W. Harrison (Venereal Diseases), Dr. R. C. Jewesbury (Pediatrics).

University College Hospital Medical School.—Mr. H. D. Wright (Bacteriology).

St. Mary's Hospital Medical School.—Mr. G. W. Ellis (Chemistry).

The title of Emeritus Professor was conferred on Dr. W. D. Halliburton, F.R.S., on his retirement from the chair of physiology at King's College, which he had held since 1890. The title of Assistant Professor of Anatomy at University College was conferred on Dr. Herbert H. Woollard.

Regulations for the academic diploma in psychology were approved and will be obtainable from the Academic Registrar in September.

It was resolved that the regulations for the M.D. examination for internal students be emended by the addition of the following before the first complete paragraph on page 276 of the Red Book, 1922–23:

> Any exemption granted to a candidate under the foregoing paragraph will hold good only at the M.D. examination immediately following the acceptance of his thesis. At any subsequent entry for the M.D. examination he must either take the whole examination or submit the same or another thesis for consideration in connexion with such subsequent entry.

The regulations for the M.S. examination for internal students (Red Book, 1922–23, p. 282) were directed to be similarly emended and corresponding amendments were made to the regulations for external students.

Mr. C. C. Choyce, C.M.G., was appointed an examiner in surgery for the year 1923–24.

Mr. H. J. Waring was appointed a governor of East London College, and Mr. Raymond Johnson was nominated as a member of the Westminster Hospital Medical School Committee.

The following have been elected chairmen for 1923–24 of the committees indicated: *Council for External Students*, Dr. Graham Little; *Co-ordination and Developments Committee*, the Vice-Chancellor (Mr. H. J. Waring).

The Semon lecture for 1922–23 on the Advancement of Laryngology will be delivered by Dr. A. Logan Turner in the rooms of the Royal Society of Medicine, on Thursday, November 1st, at 5 p.m.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

The following scholarships have been awarded for session 1923–24:

Fishmongers Exhibition for Girls: Winifred Harris. Postock Scholarship: Alice Hodge. St. Dunstan's Medical Exhibition: Joan Woods. Mrs. George M. Smith Scholarship: Kathleen Gamble. Dr. Margaret Todd Scholarship: Dorothy Wilkins, B.Sc. Miss Sharman Crawford Scholarship: Marguerite Penn. Sarah Hollis Scholarship: Ivy Varley. Isabel Thorne Scholarship: Doris Tracey. Dr. Edith Poohey Phipson Post-graduate Scholarship: Gladys Webster, M.B., B.S.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.

The following entrance scholarships for the year 1923 have been awarded:

Entrance Arts Scholarship (value £50): Mr. D. H. Le Good. Entrance Science Scholarships: Mr. H. C. Trowell (value £150), Mr. I. J. Jones (value £60). William Tite Scholarship (value £25): Mr. J. B. George.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The Museum.

THE National War Collection has now been assembled, to the number of over 3,000 specimens, in the new quarters provided for it, and the work of arranging it into groups will be proceeded with by Mr. Cecil Beadles, who is in charge. Considerable progress has been made in the cataloguing of the collection, and descriptions of nearly all the specimens, with an abstract of the history of the case, have been prepared. Sir George Makins is arranging and cataloguing the drawings, which form a valuable part of the collection, and recently a series of fifty, prepared to illustrate injuries of the vascular system and others to illustrate gunshot injuries of the spine, drawn for articles written by the late Sir William Thorburn, have been presented by Messrs. John Wright of Bristol on behalf of the editors of the *British Journal of Surgery*. When the army medical collection was committed to the custody of the Royal College of Surgeons of England to form the National War Collection it was arranged that the specimens left in store should be available for distribution. The President of the Royal College of Surgeons of Edinburgh has now been given leave to make a selection for the museum of that College.

The Conservator, Sir Arthur Keith, F.R.S., says that a noteworthy event in the history of the museum in the past year was the completion of the series which illustrates the principles of pathology. The work was commenced in 1910 by Professor Shattock and Mr. Cecil Beadles; it was interrupted by the war but was resumed, and now, to quote the words of the Conservator, for the first time in Room 3 of the museum "a complete and systematic treatise has been written not in words but in illustrative specimens." The series of specimens of human osteology has been increased by a number of gifts. A very large proportion of the prehistoric remains found in Britain during the last century are preserved in the museum, and Miss L. Tildesley was last October reappointed by the Council of Scientific and Industrial Research to continue her task of preparing a new catalogue; it has been a very laborious undertaking, involving a search of published private records preserved in the college and in the library of the British Museum. During the year Sir Arthur Keith examined a large number of specimens of human remains, or remains supposed to be human, found in England, Wales, Jersey, and Gibraltar. Mr. Alban Doran has almost completed the descriptive catalogue of the collection of surgical instruments in the possession of the College. Although confined to his home during the winter, owing to illness and failing sight, he has persevered in his task and is now engaged on the last section of the collection—the surgical instruments used by barbarous and semi-civilized people. He has also written an introduction to the whole collection. Under the supervision of the honorary curator, Sir Frank Colyer, the odontological section has been put into excellent order for the use of students. The museum will be closed during September, but on Monday, October 8th, the specimens recently added to the museum will be on view and the exhibition will remain open until Monday, November 5th.

AN ordinary Council was held on July 31st, when Sir John Bland-Sutton, President, was in the chair.

Issue of Diplomas.

One hundred and eighty-nine diplomas of membership were granted to candidates found qualified at the recent examinations; and sixteen diplomas in tropical medicine and hygiene and eleven in ophthalmic medicine and surgery were granted jointly with the Royal College of Physicians. (The names were included in the report of the Comitia of the Royal College of Physicians of London, published August 4th, p. 211.)

Court of Examiners.

Mr. Thomas Percy Legg, King's College Hospital, was elected in the vacancy occasioned by the retirement of Mr. Burghard. Mr. A. B. G. Underwood was elected a member of the dental section of the Board of Examiners in Dental Surgery in the vacancy occasioned by the retirement of Mr. Norman G. Bennett. Messrs. C. H. Fagge, L. B. Rawling, and H. S. Clogg were elected members of the section in dental surgery of the Court of Examiners in the vacancies occasioned by the retirement of Mr. F. F. Burghard and of two additional members of that section of the Board, in pursuance of a resolution of the Council regarding the enlargement of the Board.

The regulation with regard to examinations in anatomy and physiology recommended by the Conjoint Board, as noted on August 4th, p. 211, was adopted.

A letter was read from the general secretaries of the sixth triennial congress of the International Society of Surgery transmitting from the congress a hearty vote of thanks for the reception given at the College on July 19th.

The next meeting of the Council will be held on Thursday, October 18th.

CONJOINT BOARD IN SCOTLAND.

The following have passed the final examination and have been admitted L.R.C.P.E., L.R.C.S.E., and L.R.F.P.S.Glasg.:

Eileen M. M. Macdonald, Annie D. Allen, M. Kahn, J. L. Connacher, C. D. Wickramasinghe, M. N. Gelb, E. T. Hale, L. A. Moody, D. G. Coutts, H. M. Jamieson, C. A. Paulusz, Martha D. Devon, D. R. Nicol, H. S. N. Menko, W. E. Haydon, F. N. Spittel, P. M'D. Milliard, Ruby S. Beveridge, Eliazer Gelfer, J. Reid.

Medical News.

FOUNDER'S DAY at Epsom College was celebrated on the afternoon of July 30th, when the prizes were distributed by the Master of the Temple, the Rev. W. H. Draper. The head master, in the course of his annual statement, said that the building of the war memorial chapel had been begun; it would cost £12,000, and towards that amount £7,000 had been received. In the evening there was a concert in Big School.

THE old students' dinner of the London Hospital will be held at the Trocadero Restaurant on Wednesday, October 3rd, at 7.30 for 8 p.m., and the Schorstein memorial lecture in clinical medicine will be delivered by Dr. Gordon Holmes, C.M.G., C.B.E., in the medical college of the hospital during the winter term.

DR. W. MCCONNEL WANKLYN (Principal Assistant M.O.H., L.C.C.) will give a lecture on the value of accurate small-pox diagnosis in the anatomical theatre of the London Hospital Medical School, Mile End, on Wednesday, August 15th, at 4.15 p.m. The lecture is intended for senior students and post-graduates, to all of whom a cordial invitation is given.

IN the list of Birthday Honours published in our issue of June 9th (p. 987) the appointment of Dr. Thomas R. St. Johnston, Colonial Secretary of the Leeward Islands and late Brevet Lieutenant Colonel, R.A.M.C., to the Companionship of the Order of St. Michael and St. George, was inadvertently omitted.

THE Central Midwives Board for England and Wales held a special meeting and the ordinary monthly meeting on July 25th, Sir Francis Champneys presiding. At the former the names of four midwives were struck off the Roll. At the latter the Standing Committee reported a letter from the Nottingham Midwives Association asking if under Rule E. 14 midwives had to enter on their pulse and temperature charts the hour and minute at which pulse and temperature were taken. The Board replied that in ordinary cases it is a sufficient compliance with the requirements if a midwife enter "a.m." or "p.m.," as the case may be, in her notebook or chart. Should, however, the case be one which requires the detailing of the exact times, this should be carried out, preferably on four-hourly charts.

THE KING has appointed Dr. David J. Galloway to be a member of the Executive Council of the Straits Settlements and Dr. Albert L. Hoops, principal civil medical officer, to be an official member of Legislative Council of the same colony.

DR. W. A. PUSEY, President-elect of the American Medical Association for 1924–25, is emeritus professor of dermatology in the University of Illinois, Chicago, and is perhaps best known among dermatologists in this country for the part he took in encouraging the use of carbon dioxide snow in the treatment of diseases of the skin. From 1911 to 1922 he was treasurer of the American Medical Association, and he is one of the editors of the *Archives of Dermatology and Syphilology*.

PROFESSOR EHLERS of Copenhagen, the well known authority on leprosy, has been nominated honorary professor of Strasbourg University.

THE Council of the Institution of Heating and Ventilating Engineers has appointed a committee including representatives from the Admiralty and the Office of Works to report on a standard method of testing ventilating fans. It is hoped that the committee will be able to define a standard method of fan testing and to issue a standard list of terms.

MESSRS. BAILLIÈRE, TINDALL, AND COX announce the approaching publication of a new edition, the seventh, of Stedman's *Practical Medical Dictionary*. The same firm has in the press a book on *Emergency Operations* by Mr. H. C. Orrin.

M. CHARLES GODOU, founder of the Paris School of Dentistry in 1880, and organizer of dental instruction in Paris, has recently died at the age of 68.

THE twenty-third congress of the French Association of Urology will be held at the Paris Faculty of Medicine on October 10th, under the presidency of Professor André of Nancy, when the treatment of gonococcal infection by serums and vaccines will be discussed, introduced by MM. Minet and Debains of Paris. Further information can be obtained from the general secretary, M. O. Pasteau, 13, Avenue de Villars, Paris.

A GERMAN Society for Dental Anatomy and Pathology has recently been founded under the presidency of Professor Römer, director of the Leipzig University Dental Institute.

THE number of medical students in the German universities fell by 10 per cent. in the winter of 1922–23.

SURGEON LIEUT.-COLONEL EVAN EVANS, T.D., has been promoted to be a Knight of Grace of the Order of St. John of Jerusalem.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocera, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

VACCINATION.

DR. D. W. SAMWAYS (Clyst St. George, Devon) writes: Now that vaccination is being so generally performed it seems to me desirable that definite instructions regarding treatment are necessary. Should the arm be first cleaned with an antiseptic, or with, say, boiled water? Should boric lint, which appears so commonly employed, be fixed over the part afterwards, or replaced by a shield? If the boric lint be meant as an antiseptic to restrain the pustule, its employment appears unscientific if the pustule be intended to develop. In any case, the lint generally works and breaks the pustule, to which it afterwards adheres, and presumably disinfects. If the vaccination be completed by the entry of the vaccine into the system, say, in half an hour, and the local reaction be neither necessary nor desirable, even more active disinfection might be profitable; but if the pustulation be essential, a disinfecting pad seems out of place and a protecting shield appears indicated. I think my ignorance on the subject is shared by many, who would appreciate enlightenment in your columns.

MASTICATION.

"FLETCHERISM" writes: Many of your readers must have been interested in the recent letter from Mr. Morley Roberts (June 23rd, p. 1077) regarding mastication. Can anyone inform me: (1) What recorded confirmations have there been of Fletcher's theory? I know *Diet and Endurance*, the book where Professor Irving Fisher recounts an experiment where a number of American students put in practice Fletcher's advice of a diet largely, though not wholly, vegetarian, coupled with very thorough mastication. The results in endurance are almost unbelievable, except that Dr. Irving Fisher is a man of standing and reliability. (2) Are Horace Fletcher and his British coworker, Van Somern, alive or dead? If dead, did they live to a good old age, practising their special masticatory habits, and was their bodily vigour unusually maintained because of this?

INCOME TAX.

Car Transactions.

"B. K. N." replaced a 13.9-h.p. V car, which he had bought second-hand for £210, by a new 13.9 F car costing £667, the then cost of a new 13.9-h.p. V car being £450. The old V car was sold for £102, so that "B. K. N.'s" total net expenditure was £667 − £102 = £565, and he claims to deduct £450 − £102 = £348 as the cost of replacement.

*** There were two elements of improvement in the transaction; the new car was of a superior standard, and it was new as compared with the one which "B. K. N." bought second-hand; both elements have to be eliminated in ascertaining the replacement cost, but he has eliminated the former only. The calculation requires knowledge of the cost of a new 13.9-h.p. V car at the time when the old one was bought. Suppose it to have been £*x*, then the cost of a similar second-hand car at the time when the F car was purchased would have been £210 × $\frac{450}{x}$ and the amount allowable as replacement is that sum less the £102 received.

LETTERS, NOTES, ETC.

FREEDOM OF NEGRO RACES FROM CANCER.

DR. J. BELL WALKER (Ayr) reports that he saw a case of epithelioma of the penis in a negro in Nyasaland in 1904. This, it was said at the time, was the first known case of cancer in a native in those regions. The patient was sent by the medical officer at Chiromo and transferred to Dr. Walker's care at the Livingstone Memorial Hospital, Zanzibar, for operation. Chiromo, Dr. Walker continues, in those days when the railway was only being planned, was the station on the river Shiré for passengers from and to the various European centres in Nyasaland, and the patient, no doubt, would come a good deal into contact with European civilization. The contention (Dr. Bell Walker adds) that no "unsophisticated" negro contracts this disease would seem to be at least not negatived by this case.

DR. AGNES SAVILL (London) suggests that the immunity of negroes points to the existence of some factor in common for all simple living races. She asks for facts as to the main diet of these races.

TUBERCULOSIS, NOTIFICATION, AND HOUSING.

"M.R.C.S., L.R.C.P." writes: Being a general practitioner I read with due respect the statement of some "tuberculosis specialists" that there is much less tuberculosis than there was some years ago. The proof given was that far fewer cases were notified. This sort of reasoning is fallacious. Chronic cases all over the country have been notified and live on to a ripe old age and only the new developments are notified and so the public are told that there is less tuberculosis. The absurd expense of keeping up an army of tuberculosis officers is obvious to the general medical practitioner who sees the amount of actual treatment meted out by them. The tuberculosis officer keeps records and makes statistics and now and again a case is sent to a sanatorium, but for one case sent there are ninety-and-nine who get no treatment, but then they have the pleasure of being notified and their illness made public property—if anything is done. Personally I have notified one case in the last twelve months: the patient has never seen nor heard of the tuberculosis officer nor the medical officer of health. My firm opinion is that the money spent on tuberculosis officers and the tuberculosis scheme should go direct to the building of houses. More houses and less statistics seems to me to be the common-sense method of treatment.

"POISONOUS PLANTS OF ALL COUNTRIES."

DR. A. BERNHARD-SMITH (London) writes: Your reviewer (July 21st, p. 110) is good enough to suggest a botanical classification of the plants I describe in this work rather than that which I have adopted. I stated, however, in the preface to the first edition, that my classification was based on that given by Drs. Guy and Ferrier in their textbook on medical jurisprudence and see no reason to alter it now. If in error, I flatter myself that I am in good company. With regard to the poetical quotations, I am afraid that the one selected for adverse criticism is somewhat unfortunate. Swinburne, in the poem, "The Garden of Proserpine," puts a comma after his line mentioning poppies and I shall maintain that the stanzas following, which I quote—

> "Green grapes of Proserpine
> Where no leaf blooms or blushes
> Save this whereout she crushes
> For dead men deadly wine"—

are an approximately adequate illustration for *Tamus communis*.

TOPONOMY SIMPLIFIED.

THE "Ignorant Student" to whose theory of a white or wight element in many place names reference was made recently has been so obliging as to send us another pamphlet bearing the same general title *Origins in Place Names*, but with the subtitle Sounds. Here he would carry us very far—out of all whooping—to the origin of languages. He would have us believe, or so we understand him, that all place names mean the same. Gutturals he argues, would come first, when man began to try to communicate with man by sound, and the first word would be gha. "It has been computed," the Student says, "that there are no less than thirty-seven different values of the *a*-sound in English alone;" starting with this liberal allowance he finds little difficulty in reducing "all place names to a single common root of sound for their origin and to a single common meaning, such as light, white, shining." We may account thus for the by through which Tennyson's brook ran, but how about the thorpes? It is a long way from that to gaga or even ghaghaga. There is, however, this to be said for the Student's theory, that to-day the infant's first attempt at speech is something like gha-gha, and the mother's first lesson is to transform it into the polite expression of thanks.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges and of vacant resident and other appointments at hospitals will be found at pages 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *104*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page) ...	7	10	0
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An average line contains six words.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.